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Esta edição da Revista Imes Administração apresenta quatro contribuições relevantes para pesquisadores da área de administração de empresas. Dois deles são artigos internacionais da área de Recursos Humanos. O artigo de Rinefort & Petrick, da Wright State University-Ohio-EUA, fornece uma compilação de dados econômicos e de segurança e saúde no trabalho, relativos a países da União Européia. Burkard Sievers, da Bergische Universität Wuppertal - Alemanha, analisa a irracionalidade e a loucura nas organizações, discutindo o conceito da “Organização Patológica”.

A edição atual apresenta também um estudo na área de Inovação, de autoria de José Matias Pereira (Universidade de Brasília).

Finalmente, temos o artigo de James Biles, da Western Michigan University, que discute a estratégia de desenvolvimento regional utilizada na cidade mexicana de Yucatán. Consideramos importante esta contribuição, porque se insere na área de pesquisas da Regionalidade, que é foco do Programa de Mestrado em Administração do Imes. A partir de 2005, a Revista Imes Administração procurará incorporar no mínimo um artigo desta área em cada edição. Esta medida faz parte de um conjunto de inovações que será implantado neste periódico efetivamente a partir do ano de 2005, conforme já foi anunciado na edição passada.

Esperamos que a leitura da edição de número 60 seja produtiva para todos.

Marco Antonio Pinheiro da Silveira
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INSTRUMENTOS DE DESENVOLVIMENTO: UM ENFOQUE SOBRE A LEI DE INOVAÇÃO TECNOLÓGICA DO BRASIL

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RESUMO

Buscamos aprofundar neste artigo a discussão sobre a importância da construção da *Lei de Inovação Tecnológica Brasileira (Projeto de Lei nº 3.476/04)* submetida pelo Poder Executivo ao Legislativo, através da análise das principais medidas explicitadas em seu texto. Tem-se como objetivo principal demonstrar, a partir das experiências de alguns países bem sucedidos na implementação de políticas industrial e tecnológica, que o Brasil necessita de uma moderna *Lei de Inovação*, como instrumento essencial de apoio ao desenvolvimento científico e tecnológico do país. Ficou evidenciado que, apesar de o projeto de lei representar um avanço na estruturação de um arcabouço institucional para apoiar a modernização do modelo científico e tecnológico do país, ele ainda apresenta algumas deficiências. Concluímos, ao final, que o debate sobre projeto de *Lei de Inovação Tecnológica* deve ser aprofundado para evitar que se aprove um diploma legal deficiente que venha dificultar, no futuro, a construção de um modelo de desenvolvimento tecnológico autônomo no Brasil.

Palavras-chave: Lei de inovação, política industrial e tecnológica, desenvolvimento econômico, Brasil.

ABSTRACT

This article searches to deepen the quarrel on the importance of the construction of *Law of Brazilian Technological Innovation (PL nº 3.476/04)* submitted by the Executive to the Legislative one, through the analysis of the main topics in its text. The main objective is the demonstration that Brazil needs a modern Law of Innovation, as essential instrument of support to the scientific and technological development of the country, from the experiences of some successful countries in industrial and technological implementation politics. It was evidenced that, despite the law project represents an improvement of the modernization of the scientific and technological model of the country, the same still presents some deficiencies. One concludes, finally, that the debate on project of *Law of Technological Innovation* must be deepened to prevent the approval of a deficient statute that comes to make more difficult, in the future, the construction of a model of independent technological development in Brazil.

Keywords: Law of innovation, industrial and technological politics, economic development, Brazil.

INTRODUÇÃO

O estímulo à pesquisa científica e tecnológica são iniciativas oportunas para dotar um país de condições adequadas para fomentar o desenvolvimento econômico (PNUD, 2003). A elevação do nível de utilização da ciência e tecnologia, entretanto, não ocorre de forma espontânea, razão pelas quais tanto os países ricos como os mais pobres necessitam apoiar-se em políticas industriais com base no desenvolvimento tecnológico voltadas para o comércio exterior, dirigidas para acelerar os ganhos de competitividade (conforme evidenciado no âmbito da teoria da inovação). Com base na observação de que a análise dos diferentes aspectos que influenciam o funcionamento do sistema de P&D de um determinado país é fundamental para entender por que o dinamismo tecnológico ocorre mais rápida e eficientemente em algumas empresas, setores e países do que em outros, o conceito de sistemas nacionais de inovação foi desenvolvido. Sob esse enfoque, o aproveitamento pleno das vantagens que as novas oportunidades tecnológicas oferecem depende de mudanças estruturais, institucionais e sociais, tanto em nível da empresa quanto em contexto meso e macro-econômico (Lastres, 1995).

Observa-se que, em termos institucionais, o governo está desenvolvendo esforços para preencher uma lacuna na política industrial e tecnológica do país, no sentido de definir as atividades de pesquisa de interesse tecnológico para o Brasil. As diretrizes estabelecidas para a “Política Industrial, Tecnológica e de Comércio Exterior”, coordenada pelo Ministério do Desenvolvimento, Indústria e Comércio Exterior (MDICE, 2004), fazem parte de um conjunto de ações que compõem a estratégia de desenvolvimento apresentada no documento *Orientação Estratégica de Governo: Crescimento Sustentável, Emprego e Inclusão Social* (PR, 2003). Verifica-se que esse esforço tem como objetivo articular a política industrial e tecnológica com os investimentos planejados para a infra-estrutura e com os projetos de promoção do desenvolvimento regional. Fazem parte do conjunto de medidas previstas no Plano Plurianual para o período 2004-2007 (MPOG/PPA, 2004).

Podemos constatar que, concomitante com a evolução qualitativa, assistiu-se nos países desenvolvidos a um acelerado processo de inovação aplicada aos produtos, aos serviços e às organizações. Este processo de inovação aplicado aos produtos funcionou como o motor econômico da evolução dos países ricos, visto que, pelas mais-valias criadas, é um processo determinante para a formação e manutenção da referida riqueza. O processo de inovação, entretanto, não se esgota nas atividades de investigação que dão origem aos mercados das “novidades”, ou seja, aos novos produtos. Na verdade, o processo de inovação é um processo demorado, de investimento humano e de capital elevado e de retorno no longo prazo. Por sua vez, seus resultados são incertos, ou seja, não existe uma relação definida entre o investimento efetuado e o retorno esperado.

Esta realidade mostra a importância da estruturação de uma política industrial e tecnológica consistente para o desenvolvimento de qualquer país. Uma parcela significativa dos cientistas brasileiros – Coutinho (1999), por exemplo – argumenta que as políticas de ciência e tecnologia (C&T) implementadas no Brasil, especialmente nas duas últimas décadas, sempre estiveram desvinculadas das políticas econômica e industrial (MCT, 2002). Essa desarticulação tem contribuído para aumentar o espaço que separa as atividades científicas próprias da pesquisa fundamental e as ligadas ao desenvolvimento dos processos produtivos. As distorções na gestão administrativa e na carência de políticas globais na organização das atividades científicas estão afetando a geração e a difusão dos conhecimentos científicos e tecnológicos.

1. O PAPEL DO ESTADO NA CONSTRUÇÃO DE UM PLANO ESTRATÉGICO PARA A C,T&I

Em uma economia sólida, a inovação tecnológica deve ser resultado de um ambiente que produz ciência de ponta e influencia direta e indiretamente o setor produtivo, especialmente por meio dos setores de pesquisa e desenvolvimento gerados no bojo das empresas. Verificamos, entretanto, que o modelo de desenvolvimento adotado no Brasil, nas últimas décadas, não criou as condições e estímulos para que as

empresas passassem a ter tais setores nas suas estruturas. Essas distorções estão refletidas na produção científica do país, particularmente aquela proveniente das universidades públicas, que representam uma parcela significativa da produção nacional. Essa constatação nos permite argumentar que o Brasil é um país que produz ciência de fronteira mas que não consegue interagir, num nível adequado, com o setor produtivo. O resultado dessa baixa incorporação de tecnologia de ponta diretamente nos produtos torna-os pouco competitivos, tanto no mercado interno como no externo.

Criar as condições para que o país consiga avançar de forma consistente no campo tecnológico é uma tarefa árdua, que exige, além da mudança institucional e econômica, também uma mudança cultural. Torna-se perceptível, assim, que a mola propulsora para viabilizar o aumento da produção científica e tecnológica no País tem início com a criação de instrumentos reguladores dessa relação.

Apesar de a Constituição Federal do Brasil (CF, 1988) ter definido, em grandes linhas, o papel do Estado brasileiro nas diversas atividades, fortalecendo o Estado articulador, promotor e incentivador, na prática a ação do Estado em relação a C&T ainda deixa muito a desejar (Caldas, 2001). Apenas nos últimos anos a ação estratégica começou a ser delineada, com a elaboração dos Planos Plurianuais e construção de um plano estratégico para a ciência, tecnologia e inovação. Tendo como referência os preceitos constitucionais estabelecidos no artigo 218 da Constituição Federal – *que estabelece que o Estado promoverá e incentivará o desenvolvimento científico, a pesquisa e a capacitação tecnológicas* –, o Ministério da Ciência e Tecnologia (MCT) elaborou o “Projeto de Diretrizes Estratégicas para a Ciência, Tecnologia e Inovação em um Horizonte de 10 anos” (DECTI). Esse projeto deu início ao debate sobre o futuro da ciência, tecnologia e inovação (CT&I) no país, com base em temas identificados como prioritários e com significativa abrangência no cenário sócio-econômico nacional. A principal preocupação do projeto foi promover o envolvimento da sociedade no debate sobre a importância da CT&I como mecanismo de suporte para superar os problemas do país e para a promoção do desenvolvimento sustentável. Foi

o responsável, também, por deflagrar a abertura de uma ampla discussão sobre a necessidade de definir as diretrizes e estratégias para CT&I nesta primeira década do século XXI.

O projeto de DECTI/MCT foi estruturado em cinco grandes temas: No caminho do Futuro – focado em educação para a ciência e tecnologia e no avanço do conhecimento; Qualidade de Vida – focado no impacto do desenvolvimento científico e tecnológico sobre o cidadão e sobre o meio ambiente, com vistas à promoção de desenvolvimento sustentável; Desenvolvimento Econômico – focado em CT&I sob o ângulo econômico, produção de bens e serviços, em uma sociedade marcada por sérias desigualdades regionais e sociais; Desafios Estratégicos – focado nos grandes programas de impacto para a próxima década, tais como a sociedade da informação e biotecnologia, nos projetos mobilizadores nacionais e nas estratégias de exploração econômica das últimas fronteiras brasileiras; e Desafios Institucionais – focado nos desafios legais, institucionais e de organização a serem superados para que as metas propostas no projeto possam ser alcançadas.

É sobre este último tema – *desafios institucionais* – que o presente trabalho tratará. Terá como preocupação analisar e aprofundar a discussão sobre a importância da construção de um arcabouço legal que contribua para uma maior integração entre o desenvolvimento científico e tecnológico e a produção de inovação, tendo como referência o projeto de lei de *inovação tecnológica (Projeto de Lei nº 3.476/04)*, que “dispõe sobre incentivos à inovação e à pesquisa científica e tecnológica no ambiente produtivo e dá outras providências”, submetido pelo Poder Executivo ao Legislativo, em 27 de abril de 2004. O citado projeto de lei foi enviado ao parlamento em substituição ao Projeto de Lei nº 7.282, de 2002 (Matias-Pereira, 2003a).

É oportuno destacar que a citada substituição teve como argumento central que a nova proposição “tem como princípio adjacente dar mais racionalidade e organicidade ao texto proposto pelo PL nº 7.282/2002, além de adaptá-lo às estratégias e políticas do atual Governo, em especial à nova Política Industrial, Tecnológica e de Comércio Exterior, recentemente lançada”.

2. REFERENCIAL TEÓRICO, PERGUNTA MOTIVADORA E OBJETIVO DO ARTIGO

É oportuno destacar, preliminarmente, que o tema abordado neste artigo é significativamente amplo e complexo, além de polêmico, visto que existe uma parcela da comunidade científica que discorda da necessidade de que se tenha uma *política de inovação* tecnológica. A base de argumentação desse segmento da comunidade científica é o de que deve prevalecer sempre a ampla liberdade do pesquisador de determinar o objeto e escopo de suas pesquisas, ao passo que ao poder público fica o papel de financiamento das atividades de pesquisa. Filiamo-nos ao segmento que entende relevante e necessário a existência de uma política nessa área.

No debate sobre a construção de uma política industrial e tecnológica e de uma lei de inovação, torna-se relevante fazer uma análise do sistema de Ciência e Tecnologia do Brasil (SCTB). Assim, adotaremos neste artigo, de maneira preferencial, uma abordagem funcionalista, sistêmica, em que as organizações e relações foram, inicialmente, consideradas como instituições “tipo-ideal” weberiano, para facilitar a identificação e estudo dos elementos que formam este complexo sistema. Vamos levar em consideração também o conceito de “racionalidade limitada” de Herbert Simon (1978). Assim, partimos do pressuposto de que o SCTB, apesar de apoiar-se em uma base estrutural razoável, necessita ser fortalecido de várias maneiras para que possa ser ampliado, consolidado e garantido contra eventuais instabilidades no futuro.

Nossa preocupação ao iniciar este artigo por esta digressão teórica tem como propósito facilitar a compreensão de nossas argumentações, quando da análise das questões relacionadas com a formulação e implementação de políticas de desenvolvimento científico e tecnológico no Brasil. Assim, a construção de uma melhor base conceitual, teórica e metodológica visa permitir que o leitor possa melhor situar-se com relação aos argumentos que serão expostos.

Distintos autores sustentam – Morgan (1980), por exemplo – que todas as teorias das organizações se baseiam em uma *filosofia da ciência* e em uma *teoria da sociedade*. Conforme Burrell e Morgan (1979), “ordem” e “conflito” passam a constituir duas *teorias de sociedade*, assim

constituídas: i) teoria social que enfatiza a ordem e o integracionismo, por meio da valorização da estabilidade, da integração, da coordenação funcional, do consenso; e, ii) teoria social que focaliza o conflito e a coerção, por meio da mudança, da desintegração e da coerção. Aqueles autores chamam a atenção para o fato de que a realidade se posiciona em algum ponto entre os extremos opostos do *continuum* ordem-conflito.

Sustenta Morgan (1980) que a abordagem funcionalista é essencialmente ortodoxa e que ela é “baseada na pressuposição de que a sociedade tem uma existência concreta e real, e um caráter sistêmico orientado para produzir um estado de coisas que sejam ordenadas e reguladas”. Ao estabelecer a distinção entre *estabilidade* e *mudança* como aspectos específicos da ordem e do conflito, respectivamente, Dahrendorf (1959) alerta não ter a intenção de afirmar que a teoria da ordem assume que a sociedade seja estática (Burrell & Morgan, 1979). Sua preocupação é mostrar como as teorias funcionais são essencialmente correlacionadas com os processos que servem para manter os padrões de um sistema como um todo. Nesse sentido, as teorias funcionalistas são consideradas como estáticas no sentido de que elas procuram explicar o *status quo*. Aguiar (1991), utilizando o método de análise funcional, para descrever a ambiência de ciência e tecnologia no Brasil, busca explicar como os elementos que compõem o sistema nacional procuram se estabilizar, integrar e atuar harmonicamente.

2.1 Definições e conceitos de Política

O objetivo da implementação das Políticas é a determinação de alterar a realidade. Uma política expressa uma idealização mas também define estratégias de atuação e de transformação da realidade a fim de se alcançar objetivos pré-definidos (Aguiar, 1980). Assim, uma política é a explicitação de princípios sobre o que é desejável e factível realizar com relação a uma determinada questão, em determinado tempo e com determinados recursos. Neste sentido, trata-se de um construto, uma concepção de um “tipo-ideal” como imaginado por filósofos como Max Weber para analisar realidades complexas capazes de serem descritas apenas de forma aproximada por envolverem, por exemplo, número elevado de variáveis características.

A implementação de uma política tem início com a tradução dos princípios de transformação da realidade na direção desejada em *diretrizes de ação*. Como são operadores de mudança, de transformação, as diretrizes de ação devem resultar em *metas*, ou seja, em *resultados concretos* a serem alcançados num prazo estabelecido, com os *recursos* com que se poderá contar. A promoção da operacionalização das metas se faz com *programas de ação* integrados por *projetos*. Por sua vez, a execução dos projetos necessita da definição de objetivos específicos coerentes, métodos e materiais a serem empregados, recursos humanos e financeiros adequados.

Podemos graduar as políticas quanto ao seu *conteúdo*, isto é, em relação às áreas, assuntos, questões de que cuidam. Dentre as políticas definidas pelo seu conteúdo, por exemplo, podemos citar na atualidade a Política Industrial e de Comércio Exterior do governo Lula (em construção), conduzida pelo Ministério de Desenvolvimento, Indústria e Comércio Exterior. Em relação às políticas orientadas segundo suas *abrangências*, podemos ter políticas *temáticas* ou *setoriais* (política de desenvolvimento do setor de software, medicamentos, papel e celulose, entre outras), ou políticas consideradas pela sua *abrangência geográfica* (regional, estadual, nacional).

Há ainda que se levar em conta o *grau de inter-relações* entre as várias políticas. Nesse caso, temos as *políticas primárias*, políticas abarcantes e, por isso, mais amplas, e *políticas decorrentes*, definidas a partir das políticas primárias e a elas se subordinam. Assim, aceita a política de Ciência e Tecnologia como uma política primária, a política de informação em Ciência e Tecnologia será uma política dela decorrente.

2.2 Fundamentos para a formulação da pergunta motivadora

A agressiva disputa pela apropriação da informação, do conhecimento e do desenvolvimento da inovação no mundo contemporâneo, decorrente do processo de globalização, conforme delineado nas conclusões do *Livro Branco* (MCT, 2002), indica a necessidade do Brasil de construir um modelo de desenvolvimento tecnológico autônomo. Isso torna explícito que a construção de uma *Lei de Inovação Tecnológica Brasileira* – cujo teor deve refletir a percepção de que a geração de conhecimento e a formação de

recursos humanos são funções da universidade, e que a inovação tecnológica ocorre no âmbito das empresas –, apresenta-se como um instrumento relevante para reduzir a dependência tecnológica do país. Registre-se que inovação tecnológica compreende a introdução de produtos ou processos tecnologicamente novos e melhorias significativas que tenham sido implementadas em produtos e processos existentes. Considera-se uma inovação tecnológica de produto ou processo aquela que tenha sido implementada e introduzida no mercado – inovação de produto – ou utilizada no processo de produção – inovação de processo (OCDE, Manual Oslo, p. 35).

Por sua vez, a fragilidade do planejamento governamental no Brasil nas últimas duas décadas é preocupante (Matias-Pereira, 2003b). Isso indica a necessidade de o país reforçar, nos moldes do que foi feito na Coreia, o processo de planejamento nacional e, dessa forma, organizar, sob a mesma orientação da política econômica, os elementos essenciais da política industrial, científica e educacional.

A partir dessas observações, formula-se a seguinte pergunta: *o Brasil necessita de um arcabouço institucional moderno para fortalecer as áreas de pesquisa e da produção de conhecimento, que possa fomentar a criação de novos ambientes, propícios à geração e absorção de inovações?*

Na busca de responder a esta indagação, parte-se do pressuposto de que o Brasil, em termos institucionais, necessita de uma política científico-tecnológica mais consistente, que promova uma definição de quais são as atividades de pesquisa de real interesse tecnológico para o país (Nicolisky, 2001). Esta percepção está baseada nos crescentes debates e cobranças por parte da sociedade organizada para que sejam implementadas medidas para modificar a estrutura do atual modelo de desenvolvimento científico e tecnológico brasileiro (Brisolla, 1993), com vista a elevar seu nível de autonomia (Schwartzman, Krieger et al, 1995). Deve-se registrar que o Brasil possui um contingente próximo de 60 mil cientistas – um cientista para cada três mil habitantes –, o que representa cerca de 20% das necessidades do país, para atender às demandas de C&T. Em termos comparativos, os Estados Unidos possuem cerca de um milhão de cientistas, o equivalente a um cientista para cada trezentos habitantes (MCT, 2001a).

Tem-se como objetivo principal neste artigo demonstrar que a construção de uma moderna *Lei de Inovação*, como instrumento gerador de estímulo ao desenvolvimento científico e tecnológico é uma medida essencial ao país. A investigação – explicativa quanto aos fins e essencialmente bibliográfica quanto aos meios –, está apoiada nas seguintes obras e documentos: Morgan (1980), Burrell e Morgan (1979), Dahrendorf (1959); Azevedo (1994); Gibbons, Limonges et al., *The new production of knowledge* (1994); Schwartzman (2001); no *Projeto de diretrizes estratégicas para a ciência, tecnologia e inovação em um horizonte de 10 anos* (MCT, 2000); no *Livro Verde* (MCT, 2001); nas definições estratégicas do *Livro Branco* (MCT, 2002); nas *Diretrizes de Política Industrial, Tecnológica e de Comércio Exterior* (PITCE/MDICE, 2003), e no projeto de *Lei de Inovação Tecnológica* (PL nº 3.476/2004), do Poder Executivo.

3. ANÁLISE DAS EXPERIÊNCIAS DE PAÍSES DE SUCESSO NA PROMOÇÃO DE C&T

A abordagem da experiência em CT&I de alguns países bem sucedidos nessas áreas é oportuna para a compreensão do propósito deste estudo. Argumenta-se que tanto o Parlamento como a sociedade organizada brasileira, na discussão para promover o aperfeiçoamento do projeto de lei de inovação brasileira, precisam levar em consideração as estratégias que esses países adotaram em C&T para fomentar o processo de desenvolvimento econômico e social.

Na maior parte dos países integrantes da Organização de Cooperação e Desenvolvimento Econômico (OCDE, 1996 e 1997b), os governos estão adotando políticas para contrapor os efeitos provocados pelo nível elevado de abertura ao exterior que se seguiu à importante redução de barreiras tarifárias implementadas. Nesse sentido, estão adotando um significativo número de instrumentos para melhorar a competitividade de suas empresas, tanto no que se refere às exportações quanto em relação aos mercados internos expostos à concorrência externa. Verifica-se que na França, Japão e EUA os governos estão implementando medidas para sustentar sua competitividade industrial, visto que desta depende o futuro daqueles países.

As políticas de competitividade adotadas nos países da OCDE (1996), visando ao aumento das exportações, estão orientadas de forma seletiva. Tem havido uma diminuição dos subsídios diretos às empresas e ênfase no apoio ao investimento em setores intensivos em tecnologia e à constituição de infra-estrutura necessária para alcançar objetivos de crescimento de longo prazo. As pequenas e médias empresas e a organização de clusters industriais recebem tratamento diferenciado na alocação dos investimentos. Naqueles países a política industrial é percebida de maneira mais ampla e sua função é articular e envolver empresas de diferentes setores e atividades, tendo a tecnologias de informação e as comunicações como molas impulsoras do processo (Lastres e Albagli, 1999; e, Lora, 2001).

Com base na experiência dos países industrializados, argumenta-se que o caminho para o desenvolvimento econômico e social passa, necessariamente, pela eficiência tecnológica (Matesco, 2001). Essa realidade é reforçada, também, pelo sucesso de alguns países emergentes que estão gerando riqueza a partir do conhecimento alcançado em centros de pesquisa (Maldonado, 1998). A descrição feita a seguir tem como objetivo explicitar as experiências da Coreia do Sul, França, Estados Unidos e Japão, cujas políticas industriais e tecnológicas refletem e influenciam os debates sobre o tema no Brasil.

3.1 Coreia do Sul.

A Coreia, por meio da Lei nº 1.864, promulgada em 1967, denominada “Lei da Promoção de C&T”, deflagrou o processo de consolidação do desenvolvimento tecnológico e criação das infra-estruturas de C&T naquele país, com base no modelo *learning by doing*. Posteriormente, em 1989, foi promulgada a Lei nº 4.196, conhecida como “Lei da Promoção da Pesquisa Básica”, que expressa a visão política de que a inovação depende essencialmente da capacidade inventiva do país, para fazer face ao novo modelo de desenvolvimento industrial *learning by research*.

Com a aceleração do processo de industrialização ocorrido na Coreia, a partir da década de 1970, a principal vertente de desenvolvimento econômico daquele país foi a de trabalhadores altamente qualificados com salários relativamente baixos, com altas taxas de poupança e mecanismos de proteção das indústrias nacionais (Shin, et al.,

1994). A vantagem comparativa da Coréia com base nesses fatores não é mais efetiva, uma vez que não estão mais disponíveis recursos ociosos, bem como a economia encontra-se plenamente aberta ao mundo. Consta-se que o ambiente econômico está mudando rapidamente na Coréia à medida que avança a globalização e, portanto, estão aumentando as necessidades de mudança nas políticas públicas com vistas a uma transição bem sucedida para uma economia baseada no conhecimento naquele país (*Science and Technology Policy Institute – STEPI*, 1995). A implicação, nesse caso, é que a Coréia está buscando identificar outras fontes de vantagens comparativas, principalmente em atividades de C&T.

Registre-se que um dos modelos bem sucedidos de prospecção tecnológica foi elaborado quando o MCT concluiu, em 1992, um programa nacional de P&D denominado Projetos Nacionais Altamente Avançados. O propósito desses projetos era potencializar a competitividade das indústrias nacionais mediante o aumento da capacidade local em ciência e tecnologia. Naquela fase a política de C&T na Coréia carecia de unidade no planejamento de C&T. Isso se deve, em grande parte, ao sistema diversificado de formulação da política de C&T naquele país. Uma avaliação dos Projetos Altamente Avançados (*Highly Advanced Projects – HAN*), três anos após seu início, evidenciou que a iniciativa dos projetos HAN foi bem sucedida. Essa iniciativa tem sido considerada na formulação de grandes políticas no setor de C&T na Coréia, como foi o caso da elaboração da Lei Especial sobre C&T em 1997, com vistas a um aumento substancial da capacidade de C&T mediante um plano quinquenal para o desenvolvimento de C&T.

O Ministério da Ciência e Tecnologia da Coréia (MCT) tem a função de atuar como “líder”, especializado em áreas em comum, interdisciplinares e estratégicas, e assume responsabilidade pela articulação geral entre todos os demais ministérios e órgãos. Nas últimas três décadas, o MCT da Coréia tem sido responsável por encabeçar as atividades de C&T, tanto no setor público como no setor privado. A diversificação e o aumento da importância da C&T em atividades sócio-econômicas de amplo alcance forçou a transferência das responsabilidades e os recursos de C&T para outros ministérios naquele país. É oportuno lembrar que a Coréia aplica anualmente cerca de 2,5% de seu PIB em P&D. Isso explica, em parte,

porque aquele país asiático ocupa um lugar de destaque entre os países que exportam produtos de alta tecnologia. Observa-se que o desempenho econômico da Coréia, especialmente a partir dos anos 1980, tem uma forte correlação com a formulação e a implementação da política de C&T. A análise das medidas – que tem como meta elevar a Coréia à categoria de economia desenvolvida, apoiada no tripé indústria-educação-conhecimento em C&T – demonstra que foi estruturado naquele país um conjunto de normas e orientações adequadas, que estão auxiliando o país a atingir os objetivos políticos propostos.

É preciso considerar, também, a importância da disciplina utilizada para consolidar o ordenamento administrativo e jurídico e a montagem de suas bases de dados e de indicadores, revistas no estudo “*Country Review*” (OCDE, 1996). O domínio pela sociedade coreana das informações do país, a preocupação em manter uma regularidade e continuidade na produção de informações e na promoção de estudos, por institutos especializados, tem sido decisivos para o planejamento público e privado naquele país. Registre-se que o gasto total da Coréia em P&D, superior em volume ao brasileiro, viabilizou-se porque as empresas daquele país têm condições de investir cerca de 2% do PIB em atividades de pesquisa e desenvolvimento (MCT, 2002).

3.2 França

A política industrial francesa tem concedido fortes estímulos financeiros para viabilizar a montagem de grandes projetos aglutinadores de competências em áreas estratégicas. Essa política está apoiada na utilização de concessão de subsídios e de renúncia fiscal. Os subsídios para financiamento e renúncia fiscal são concedidos para grandes empreendimentos ou para aqueles destinados a áreas estratégicas selecionadas. A agência do governo responsável pela concessão de incentivos financeiros é a DATAR. Por sua vez, as pequenas e médias empresas são contempladas com linhas de crédito subsidiado, como, por exemplo, as dotações concedidas pela *Société Française pour l'Assurance du Capital-Risque*. O suporte tecnológico é ofertado às pequenas e microempresas pelo governo francês por meio de programas específicos, como o ANVAR e ATOUT.

A política industrial da França, nas últimas décadas, tem promovido uma estreita associação de interesses entre o Estado e um núcleo de grandes empresas localizadas em setores dinâmicos da economia, muitas delas com significativa participação do capital estatal. As prioridades são orientadas para estimular a criação de capacitação produtiva e tecnológica da indústria, com destaque para os grandes programas públicos nos setores de telecomunicações, aeroespacial e de energia nuclear.

3.3 Estados Unidos da América.

O governo dos EUA intervém no mercado tecnológico por meio da concessão de grandes incentivos à acumulação e aplicação de capital privado nessa área. O principal instrumento utilizado pelo governo norte-americano é o uso do poder de compra do Estado em favor de produtores locais (*Buy American Act*). Além dessa legislação o governo daquele país utiliza um amplo e generoso programa de financiamento a fundo perdido para o desenvolvimento tecnológico de pequenos e microempresários (*Small Business Innovative Research – SBIR*). O volume de subsídios diretos e o uso do poder de compra que foram orientados pelo governo dos EUA às atividades de P&D, na década de 1990, atingiram cerca de US\$ 100 bilhões ao ano.

O grande volume de subsídios concedido pelo governo norte-americano ao setor privado é considerado um instrumento de importância vital para estimular pequenas empresas daquele país a investir em tecnologia. Em relação às grandes empresas industriais, que buscam recursos no mercado de capitais, o apoio do Estado se efetiva por meio de contratações de serviços e compra de produtos fabricados por empresas localizadas no país.

O apoio governamental para estimular a P&D nos EUA a fim de facilitar a cooperação entre empresas, universidade e laboratórios federais teve início da década de 1960. Sua expansão, entretanto, ocorreu com a aprovação do *Stevenson-Wydler Technology Innovation Act*, de 1980. A partir dessa lei o governo norte-americano facilitou o acesso aos laboratórios federais para o setor industrial, disponibilizando não apenas infra-estrutura altamente especializada, bem como, oportunidades de parceria no financiamento e uso por instituições privadas de tecnologias desenvolvidas por instituições públicas de pesquisa.

Outra medida institucional importante no campo da pesquisa nos EUA foi a aprovação do *Bayh-Dole Act*. Essa legislação foi direcionada para a questão de propriedade intelectual uniforme, permitindo às universidades, institutos de pesquisa e pequenas empresas reter a titularidade de patentes de invenções derivadas de pesquisas financiadas com recursos públicos federais e facultar às instituições beneficiárias desses recursos transferir tecnologia para terceiras partes. O *Bayh-Dole Act* foi responsável pelo aumento significativo do nível de patenteamento nas universidades daquele país.

3.4 Japão

As características e os avanços alcançados pelo Japão no campo da C&T, nas últimas três décadas, indicam a oportunidade de analisar com especial atenção a política industrial e tecnológica daquele país (Freeman, 1987). Verificou-se, ao longo dos anos 1970, uma significativa mudança qualitativa na estrutura tecnológica do Japão, onde ocorreram profundas mudanças com a reorientação do modelo de desenvolvimento adotado até então, apoiado em indústrias intensivas em energia e outros insumos materiais.

O novo modelo passou a priorizar a capacitação tecnológica e a formação de indústrias intensivas em conhecimento, não-poluidoras e com alto valor agregado. Na fase inicial os segmentos eleitos foram: a microeletrônica, aviação, desenvolvimento de recursos marítimos e energéticos. Na fase seguinte, foram escolhidos: biotecnologia, novos materiais e tecnologias da informação e comunicação. Verifica-se neste período o processo de transição da fase de *catching up* para a disputa da liderança tecnológica mundial (Albuquerque, 1996).

O Plano Básico japonês para C&T, aprovado em 1996, teve como objetivo estabelecer políticas específicas para C&T em um prazo de cinco anos. No citado Plano Básico se destacam as mudanças institucionais orientadas para a construção de um novo sistema de P&D, a expansão dos recursos públicos destinados à P&D, à criação de novas indústrias com ênfase nas tecnologias de informação e comunicações e à promoção de um consenso nacional acerca da importância de C&T. Os fundamentos levados em consideração para sua elaboração foram: a estagnação ocorrida nos últimos anos do montante de recursos globais japoneses destinados a C&T; os menores recursos

aplicados pelo governo japonês neste item comparativamente aos demais países da OCDE; e a necessidade de maior flexibilização e competitividade do sistema de P&D japonês.

Foi dada prioridade à pesquisa básica, aplicada em tecnologias da próxima geração, particularmente as tecnologias da informação. Buscava-se, ainda, ampliar os recursos para a área de P&D, enfocando a conservação de energia e ambiente. Destacava-se, entre as demais áreas de interesse: a supercondutividade, novos materiais, biotecnologia, eletrônica, informação e comunicações, máquinas, aeroespacial, recursos naturais, ciências sociais e médicas. Registre-se que foram desenvolvidos esforços naquele país desde o início da década de 1990, visando avançar o conhecimento em áreas identificadas como importantes fronteiras científicas no próximo milênio, como, por exemplo, o *Human Frontier Science Program*.

Na década de 1990, por sua vez, a política tecnológica do Japão passa a interagir de maneira mais intensa com a política industrial (Maldonado, 1998). Constata-se, nos princípios gerais da política industrial e tecnológica elaborados pelo MITI, para o final da década, a atribuição de três diretrizes básicas: solucionar as questões relativas ao padrão de especialização da indústria japonesa, com forte ênfase em políticas industriais e tecnológicas e, sobretudo, de promoção de *clusters* regionais; construir uma sociedade e uma economia que levem em conta a questão ambiental e com prioridade no bem estar social dos cidadãos, cuja tônica é a política energética; e promover a adoção de políticas de investimento e de comércio adequadas a uma economia global baseada em redes, que expressa as prioridades japonesas do ponto de vista internacional.

4. A CONEXÃO ENTRE A LEI SOBRE INOVAÇÃO E PESQUISA DA FRANÇA E O PROJETO DE LEI DE INOVAÇÃO TECNOLÓGICA DO BRASIL

Abordado os aspectos mais destacados das políticas industrial e tecnológica dos países mencionados anteriormente, torna-se possível iniciar a análise da relação e dos aspectos mais relevantes da Lei de *Inovação e Pesquisa* da França (Lei nº 99-587), bem como do projeto de lei de *inovação tecnológica* do Brasil (PL nº 3.476/04).

4.1 Comentários à Lei sobre inovação e pesquisa francesa

A Lei sobre Inovação e Pesquisa da França, nº 99-587, de 12 de julho de 1999, estabelece os procedimentos legais da relação público-privada, além de criar mecanismos que estimulem a inovação tecnológica no ambiente universitário. Tem como objetivo facilitar a transferência de pesquisa financiada pelo setor público para a indústria e a criação de empresas inovadoras. A experiência mostra que a utilização econômica dos resultados da pesquisa é um fator básico do dinamismo da economia; o número de empresas criadas a cada ano utilizando os resultados de pesquisa financiada pelo setor público permanece demasiado baixo. São, entretanto, essas empresas que têm o mais forte potencial para crescimento. Observa-se que a citada Lei de inovação e pesquisa tem como propósito reverter esta tendência e proporcionar um contexto legal que fomente a criação de empresas inovadoras de tecnologia, sobretudo por parte de pessoas jovens, sejam eles pesquisadores, estudantes ou empregados.

A Lei francesa está estruturada em quatro seções, que cuidam de: mobilidade dos pesquisadores em direção à indústria e as empresas; cooperação entre estabelecimento de pesquisa do setor público e as empresas; quadro geral fiscal para empresas inovadoras; quadro geral jurídico para empresas inovadoras. A comparação do conteúdo da Lei francesa indica que ela mesma influenciou decisivamente o projeto de lei de inovação tecnológica do Brasil. A similitude entre o teor da Lei sobre Inovação e Pesquisa da França e o texto do projeto de lei nacional é bastante evidente.

4.2 Comentários ao projeto de lei de inovação brasileira

É inegável que a consecução das metas na área de ciência e tecnologia passa pela formulação de um arcabouço legal, cujo conteúdo permita dinamizar a relação entre universidades, institutos de pesquisa e o setor produtivo nacional. Nesse sentido, a experiência internacional referente às legislações que definem medidas para a promoção da ciência, tecnologia e inovação são reveladoras, e os exemplos aqui assinalados servem como ilustração, para comprovar que os países que consideram C&T como atividade estratégica constroem sistemas legais que estimulam, de forma coordenada, o desenvolvimento científico,

tecnológico e a inovação no setor industrial. Não se tem a intenção de prescrever que as políticas de CT&I desses países sejam adotadas na íntegra pelo Brasil, levando-se em consideração a dimensão física, a diversidade regional e a complexidade econômica, política, cultural e populacional desses países.

Verifica-se, a partir da análise dos 28 artigos do projeto de lei nº 3.476, de 2004, do Poder Executivo, distribuídos em sete capítulos – que compõem a proposta de *Lei de Inovação Tecnológica* do Brasil, em tramitação no Congresso Nacional –, que existe uma oportuna preocupação do governo federal com a geração de estímulos à inovação, flexibilizando atividades e relações das instituições científicas e tecnológicas. Assim, o projeto de lei em análise busca enfrentar o desafio de criar no país as condições necessárias para que o país possa dar um salto consistente no campo tecnológico, em particular quando reconhece que entre as soluções apontadas para corrigir rumos está incrementar a interação entre Instituições Científicas e Tecnológicas, incluindo os Centros de Educação Tecnológica, que afinal produzem ciência de qualidade, pelo menos algumas delas, e o parque produtivo.

As definições conceituais que levam à compreensão das disposições normativas estão contidas no capítulo I do texto. O Capítulo II cuida do estímulo à construção de um ambiente de inovação, trazendo os comandos permissivos para a interação profícua entre as entidades de pesquisa e a iniciativa privada. Destaca-se, em especial, a sinergia para viabilização de empresas emergentes, por meio do processo de incubação, e a colaboração com empresas consolidadas.

O capítulo III está orientado para a geração de estímulos para a participação das entidades públicas de pesquisa no processo de inovação. Preocupa-se em definir normas que permitam a transferência e o licenciamento de tecnologia das universidades e institutos de pesquisa públicos do país para o setor produtivo nacional. Buscando evitar a aplicação inadequada da Lei nº 8.666/1993, cuja formulação não foi orientada para a questão tecnológica, o projeto em análise propõe modificação no texto da referida Lei de Licitações, dispensando das modalidades de licitação a contratação para transferência e licenciamento de tecnologia pelas instituições científicas e tecnológicas.

Nesse sentido, o projeto de lei estabelece que: (1) em se tratando de contratação com cláusula de exclusividade para exploração da criação, prevê-se a modalidade de chamada pública, cujo procedimento será oportunamente regulamentado; (2) havendo fundamento para contratar sem exclusividade de exploração, as entidades públicas de pesquisa poderão fazê-lo diretamente com os interessados do setor produtivo. As modificações propostas visam retirar os obstáculos que impediam a exploração pela sociedade dos produtos e processos inovadores produzidos dentro das universidades e instituições públicas de pesquisa. Fica definida, dessa forma, a relação entre tais entidades públicas e o setor produtivo nacional.

Por sua vez, a permissão legal à prestação de serviços por parte das instituições científicas e tecnológicas contida no texto do projeto, que visa acabar com a relação artificial atualmente vigente, viabilizará que o setor produtivo tenha maior interação com os pesquisadores públicos brasileiros. Isso contribuirá para aumentar a transparência no convívio público-privado. A prestação de serviços implicará o pagamento de remuneração ao pesquisador envolvido, sob a forma de adicional variável.

A parceria prevista no art. 9º do projeto de lei, orientada para o desenvolvimento de projetos de pesquisa científica e tecnológica, dada entre instituições públicas de pesquisa e instituições privadas, impõe a consecução de contrato cujo objeto trate os aspectos envolvendo a titularidade da propriedade intelectual das criações resultantes da parceria. Os pesquisadores públicos, nesse caso, poderão perceber bolsas de estímulo à inovação, uma nova categoria de bolsa. Prevê-se, também, no art. 13 o reconhecimento do pesquisador público ao garantir sua participação em até um terço do total dos ganhos previstos contratualmente, caso tenha sido inventor, obtentor ou autor da criação objeto da relação.

A possibilidade de concessão de recursos financeiros, humanos, materiais ou de infraestrutura ao setor produtivo nacional se apresenta como uma das medidas mais relevantes do projeto de lei em análise. Conforme previsto no art. 19, a União, as ICT e as agências de fomento promoverão e incentivarão o desenvolvimento de produtos e processos inovadores em empresas nacionais e nas entidades nacionais de direito privado sem fins

lucrativos voltadas para atividades de pesquisa, mediante a concessão de recursos financeiros, humanos, materiais ou de infra-estrutura, a serem ajustados em convênios ou contratos específicos, destinados a apoiar atividades de pesquisa e desenvolvimento. Fica autorizada a concessão de recursos financeiros, sob a forma de subvenção econômica, financiamento ou participação societária, visando ao desenvolvimento de produtos ou processos inovadores; será precedida de aprovação de projeto pelo órgão ou entidade concedente. No caso de subvenção econômica, a empresa beneficiária deverá assumir obrigação de contrapartida, na forma estabelecida nos instrumentos de ajustes específicos. Também será assegurada a destinação de percentual mínimo dos recursos do Fundo Nacional de Desenvolvimento Científico e Tecnológico – FNDCT e sua aplicação nas finalidades específicas a que por lei estejam vinculados.

É importante destacar que o instrumento de incentivo público ao setor produtivo para desenvolvimento tecnológico, contido no art. 19 do projeto de lei, é uma conduta permitida nos acordos e tratados internacionais, em especial, no âmbito da Organização Mundial do Comércio. Nos países mais avançados, onde a produção tecnológica é elevada, podemos verificar que a atuação do Poder Público não prescinde do apoio direto à iniciativa privada, que, além de ser um pólo atrativo, é o principal interessado na inovação.

Com base nessas considerações, pode-se afirmar que a principal característica do projeto de lei de *inovação* é a viabilização de uma interação entre a esfera governamental, a comunidade científica – universidades, institutos e centros de pesquisa – e o mundo empresarial. Para atingir esse propósito propõe-se superar as dificuldades existentes à inovação, gerando estímulos ao empreendedorismo científico e tecnológico, bem como aumentando a competitividade e facilitar a conquista de mercados externos. Destaca-se também no projeto a geração de estímulo às instituições federais para a celebração de contratos de transferência e de licenciamento de tecnologia, preocupando-se ao mesmo tempo em garantir salvaguardas de proteção do conhecimento obtido.

A preocupação em permitir o afastamento de pesquisadores empreendedores, para que possam desenvolver atividade empresarial relativa à produção de bens diretamente decorrentes de

criação de sua autoria, que permitirá transformar o conhecimento em bens tangíveis para a sociedade, está em sintonia com a legislação existente nos países mais avançados. É importante, entretanto, reavaliar os riscos de um esvaziamento das universidades públicas, considerando que no texto da proposta não se prevêem mecanismos que permitam às universidades controlar adequadamente o trabalho dos pesquisadores que se afastarem para desenvolver projetos de pesquisa no setor privado. Nesse sentido, a nova lei deve preocupar-se, também, com a transparência na relação entre os professores das universidades e empresas.

Constata-se, na parte que cuida da gestão da inovação, que o projeto de lei é carente de normas definidoras que permitam às universidades controlar melhor o trabalho dos pesquisadores que venham a se afastar do ambiente acadêmico para desenvolver projetos no setor privado. É indesejável para a sociedade que o interesse do pesquisador prevaleça em relação ao da instituição a que ele está ligado. Nesse sentido, é preciso preservar os interesses das instituições de pesquisa para impor limites à iniciativa privada. Observa-se que uma parcela dos professores que atuam como consultores ou que executam projetos para o setor privado usam as fundações de apoio das universidades, que firmam contratos e movimentam recursos praticamente sem prestar contas às universidades. Caso isso não seja corrigido, corre-se o risco de o interesse do pesquisador acabar prevalecendo em relação ao da instituição a que ele está ligado.

CONSIDERAÇÕES FINAIS

O exame mais aprofundado do novo teor do projeto de lei de inovação tecnológica brasileira (PL nº 3.476/2004) revela que houve uma significativa melhoria em relação ao texto do projeto de lei anterior (PL nº 7.282/2002). As correções e ajustes que foram feitas no texto do projeto em tramitação estão evidenciadas na preocupação de harmonizar o texto da futura lei de inovação com os demais diplomas legais que regulam a matéria no país (Matias-Pereira, 2003d).

Sabemos que o processo de estruturação de competências tecnológicas e organizacionais requer um amplo e constante acesso às fontes

de informação básica, visando transformar informações em conhecimento. Para que isso ocorra, as empresas – cujo propósito é desenvolver seus próprios sistemas de aprendizado tecnológico e organizacional – precisam criar departamentos específicos de P&D (Roussel, Saad e Bohlin, 1992). Assim, torna-se oportuno reforçar no projeto de lei a essencialidade dessas questões, visto que sem tecnologia as possibilidades de competir nos mercados mundiais ficam comprometidas.

Nesse sentido, a criação e manutenção dos centros de P&D e a conseqüente valorização dos recursos humanos altamente qualificados que atuam nesses centros deve ser uma medida prioritária para o país. Esse esforço contribuirá para reduzir o papel das empresas multinacionais como principais produtoras e detentoras de tecnologia de ponta. A geração de estímulos para elevação na prioridade dada pelas empresas para a área de ciência e a tecnologia tem como propósito evitar que continue ocorrendo o processo de desmantelamento de centros de P&D e a conseqüente dispensa de recursos humanos de alto nível.

A atenção que vem sendo dada pelas políticas de C&T para as instituições voltadas para capacitação da produção é visível, colocando num plano secundário a pesquisa científica e tecnológica (MCT, 2002). Isso tem contribuído para o enfraquecimento da capacidade científica e tecnológica do país, resultando, dessa maneira, numa defasagem cada vez maior em relação às necessidades sociais e materiais da população. Torna-se relevante, assim, no aprofundamento do debate para o aperfeiçoamento do projeto de lei, que a questão da definição de estímulo à inovação tecnológica nas empresas não se torne apenas um instrumento de incentivos para favorecer o ambiente inovativo empresarial.

Registre-se que, nos países desenvolvidos, onde existe um consenso de que o lugar privilegiado da inovação é a empresa e não o ambiente acadêmico, o poder de compra do Estado é um dos impulsionadores da atividade inovativa. São por meio das denominadas “encomendas tecnológicas” que o Estado, em vez de comprar indiscriminadamente, a partir do menor preço internacional, faz uma opção pelo desenvolvimento do produto em uma empresa nacional. A experiência sedimentada nos países que adotam essa prática indica que ela é compensadora, mesmo

que a um preço inicial mais alto e com um tempo de execução maior. Quando a tecnologia é desenvolvida no próprio país tem-se como resultado o estímulo à geração de empregos, domínio tecnológico e elevação do nível de competitividade. Assim, é importante registrar que a inclusão no projeto de lei de normas privilegiando o regime de compras preferenciais, pelo Estado, com o fim de viabilizar projetos de pesquisa e desenvolvimento no interior das empresas, é uma medida bastante adequada. É recomendável, entretanto, que sejam criadas garantias adicionais na sistemática de compras governamentais prevista no projeto de lei para estimular projetos estratégicos. O aperfeiçoamento do texto legal evitará que sejam impetradas ações judiciais que irão emperrar o processo de contratação.

As deficiências assinaladas não invalidam os méritos das diretrizes contidas no projeto de lei de *inovação tecnológica*, cujas medidas se coadunam com as melhores políticas industriais e tecnológicas adotadas pelos países que possuem economias apoiadas na economia do conhecimento. Esta constatação reforça a argumentação de que o projeto de lei deve ser aperfeiçoado, para que possa gerar os estímulos adequados à inovação, flexibilizando atividades e as relações das instituições científicas e tecnológicas.

CONCLUSÕES

Conforme evidenciado, as análises e os argumentos utilizados neste artigo permitiram responder, mesmo que parcialmente, à pergunta formulada no início deste artigo, que questionou a necessidade do país de construir um arcabouço institucional moderno para fortalecer as áreas de pesquisa e da produção de conhecimento, para fomentar a criação de novos ambientes, propícios à geração e absorção de inovações. Observa-se que nesta análise ficou reforçada a importância de uma lei de inovação moderna, que funcione, entre outros aspectos, como instrumento de suporte para romper o círculo vicioso da dependência tecnológica do país.

Assim, apoiado nas observações e constatações feitas – sem desconsiderar os avanços apontados no projeto objeto desta análise –, torna-se possível afirmar que o texto do projeto de lei de inovação, em tramitação no parlamento, ainda apresenta

algumas falhas e deficiências que necessitam ser aperfeiçoadas. O projeto de lei, que peca pela sua amplitude e por excesso de detalhes, entre outras deficiências, não está orientado de maneira satisfatória para a geração de estímulos e apoio a micro e pequenas empresas do país. Necessita cuidar, ainda, de forma mais adequada, das normas definidoras que tratam da interação entre os três atores principais para o sucesso da lei de inovação, ou seja, o inventor, a universidade e os institutos de pesquisa, e o capital de risco. Definir as regras dessa relação em contrato, que ainda permanecem

obscuras, é fundamental para o sucesso da futura lei de inovação. Assim, fica evidenciada que as partes mais relevantes envolvidas nessa questão – parlamento, governo federal, empresas e universidades e centros de pesquisa –, necessitam intensificar e aprofundar o debate sobre o tema objeto deste estudo. A aprovação de um diploma legal deficiente na área de inovação tecnológica, além dos prejuízos econômicos que irá causar, contribuirá para dificultar a construção de um modelo de desenvolvimento tecnológico autônomo no Brasil.

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Laboratório de Regionalidade e Gestão

O Laboratório de Regionalidade e Gestão visa participar da formação de mestres em administração por meio de trabalho acadêmico necessário **ao desenvolvimento social, econômico, cultural e educacional** de conjuntos regionais do Brasil e da América Latina. Apesar de dar suporte à área de concentração Regionalidade e Gestão, o laboratório não é de exclusividade desta área. Os objetivos do laboratório são **inserção no processo de desenvolvimento regional**, apoio à formação de pessoal qualificado das empresas, organizações governamentais, produtores socioculturais e sistema educacional em diversos níveis e programas.

Desse modo, **produzirá o conhecimento** e disseminação indispensáveis ao avanço dos projetos sociais e econômicos regionais. Uma de suas linhas de pesquisa visa investigar em que medida as políticas públicas e privadas de educação, cultura, comunicação e turismo exploram os recursos da região, ao mesmo tempo que atendem às necessidades locais. Outra linha de pesquisa pretende **capacitar gestores públicos** preparados para identificar necessidades da comunidade e mobilizar seu potencial de colaboração em prol de programas e projetos de desenvolvimento regional.

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OCCUPATIONAL SAFETY AND HEALTH IN THE UNITED KINGDOM, FRANCE, GERMANY AND THE EUROPEAN COMMUNITY

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RESUMO

Este artigo fornece uma compilação de dados econômicos e de segurança e saúde no trabalho, relativos a países da União Européia, com informações mais detalhadas sobre o Reino Unido, França e Alemanha. A legislação pertinente, instituições governamentais, associações profissionais, associações comerciais e uniões de trabalhadores em cada país são brevemente descritas. Textos e estudos a respeito da economia da segurança no trabalho nestes países são sumariados.

Palavras-chave: segurança e saúde no trabalho, economia da segurança do trabalho.

ABSTRACT

This paper provides a compilation of current economic and occupational safety and health data about the countries of the European Union and more detailed information about the United Kingdom, France and Germany. Pertinent legislation, governmental institutions, professional associations, trade associations and labor unions in each country are briefly described. Writings and studies about the economics of occupational safety in these countries are summarized.

Keywords: occupational safety and health; economics of occupational safety.

INTRODUCTION

Occupational safety and health (OSH) problems continue to be of significant importance in the United Kingdom, France, Germany and to all of the countries which form the European Union (EU) (Jones-Lee, 2000; Hillage, 1999; Beatson, 1998; Miele, 1995). The various historic approaches of the United Kingdom, France and Germany - influenced by input from the United States - and now harmonized into the tapestry of the European Union can provide better understandings of OSH in Europe (Phillips, 2000; Gevers, 1983).

This paper provides a compilation of current economic and OSH data about the countries of the European Union and more detailed information about the United Kingdom, France and Germany. Pertinent legislation, governmental institutions, professional associations, trade associations and labor unions in each country are briefly described. Writings and studies about the economics of occupational safety in these countries are summarized.

GLOBAL INFLUENCES ON OSH

The United Nations remains the most influential of those institutions which influence OSH in the European Union (Freestone, 2000). The UN utilizes both its historic agency, the International Labor Organization, (ILO) located in Geneva Switzerland and one of its principal arms, the United Nations Economic, Social and Cultural Organization (UNESCO) to deal with OSH on a world basis (Zangemeister, 1997).

The ILO deals with a wide variety of labor issues. The organization provides a forum by which 180 international agreements or conventions have been reached. Approximately half of these conventions deal at least to some extent with working conditions. The ILO also provides for the exchange of safety information through its International Occupational Safety and Health Information Center and allows for the interaction of the activities and programs of countries by its Global Program on Occupational Safety, Health and the Environment (Health & Safety Commission, 1982).

In addition, the International Organization for Standardization (ISO) drafts and enacts international operating standards, crucial to fostering

international trade (Petrick and Furr, 1995). Most relevant to occupational safety and health are ISO 9000, which deals with product quality standards, and ISO 14000, which deals with environmental standards. Organizations which meet the requirements of these standards receive certification, participate in international trade more readily, and can communicate this achievement to mobile stakeholders - investors, customers and employees (Lindsay and Petrick, 1997).

The United States also provides input into OSH in the EU (Purvis, 1998). The National Safety Council provides services to EU countries and firms by its International Safety Council located in Borough Green, Kent, United Kingdom. OSHA's Voluntary Protection Program Participants Association (VPPPA) encourages members to provide strong support for company safety programs overseas and firms such as General Electric and Motorola have done so (Phillips, 2000).

THE EUROPEAN UNION

The original EU consisted of these countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom. Subsequently, the Czech Republic, Hungary, Poland, Estonia and Slovenia have joined with combined GDPs of \$US261 billion and 62 million people to add to the membership in the EU. Their membership does not significantly impact the economic power of the EU, whose GDP is close to \$10 trillion.

The EU governing institutions are located throughout Europe but are centered in Brussels where the Parliament and Commission are located. Brussels is also the location of the Health and Safety Directorate which has enacted directives dealing with occupational health and safety frameworks, work equipment and machinery, CRT display screens, personal protective equipment, working time, temporary construction sites, manual handling, environmental radiation, asbestos and other less significant issues (Coenen and Meffert, 1997; Lechmann and Thiehoff, 1997).

Bilbao, Spain is now home to the EU Agency for Safety and Health at Work which performs administrative and educational activities. The European Foundation for the Improvement of

Living and Working Conditions, Dublin, Ireland, provides important input to the EU including ongoing research studies and the collection and dissemination of information regarding causes of injuries and diseases, and statistical data and analyses (Clarke and Glendon, 1988). EU's Trade Union Training Bureau in Brussels provides safety and health information and training for workers. The Nordic Institute for Advanced Environmental Studies (NIVA) sponsors and publishes research and conferences (Hillage, 1999).

Table 1 provides overview data about each of the members of the EU with regard to both economic performance and safety and health records. Gross domestic product and population indicate relative economic size; work fatalities and rates overview occupational safety and health experience.

THE UNITED KINGDOM

The United Kingdom (including England, Scotland, Wales and Northern Ireland) has a long history of involvement and leadership on occupational safety and health particularly economic analysis (Health and Safety Commission, 1982; Hodgson, Jones, Osman and Elliott, 1993; Davies and Teasdale, 1994; Purvis, 1998).

The first legislation by Parliament regarding safety and health was the Explosives Act of 1875. This was followed by legislation regarding specific potential catastrophic events such as boiler explosions, alkali releases coal mining, fireworks manufacture and radioactive substances. A more general Factories Act covering broader economic sectors was enacted in 1961. In 1972 Lord Robens headed a committee which recommended comprehensive legislation similar to the OSHA in the U.S. The Health and Safety at Work Act of 1974 established a Health and Safety Commission or HSC and a Health and Safety Executive or HSE. Both are headquartered in London. The Health and Safety Commission publishes annual reports, work plans and descriptions of activities and the Health and Safety Executive administers the act.

There are a number of other institutions located in London, which deal with safety and health issues. The British Safety Council provides an ongoing variety of services to members with an emphasis on training and education and certifi-

cation and recognition of members. A 1998 publication of the British Safety Council is a useful pamphlet entitled, "Understanding the Benefits of Best Practices." The organization also sponsors the International Institute of Risk and Safety Management. Professionals can become members of the Royal Society for the Prevention of Accidents (RoSPA). The Confederation of British Industries, the large industrial trade association, has an active Health and Safety Department. The Trades Union Congress, which coordinates trade union activities, continues to participate in safety and health affairs.

A number of important economic studies of safety and health issues have been performed in the U.K. The beginning point for these studies and the use of cost-benefit analysis to calculate the most effective ways to reduce work injuries is the book, *Cost-Benefit Analysis: An Informal Approach* by Ezra Mishan first published in 1971 and the 1976 book by Michael Jones-Lee, *The Value of Life: An Economic Analysis*. In 1982 the Health and Safety Commission published a discussion document, *Cost/Benefit Assessment of Health, Safety and Pollution Controls* which provided a framework for the use of this tool. Responses to this document were made by many including the Confederation of British Industries and the Trades Union Congress.

In recent years research continues and results are published. In 1993 Hodgson, Jones-Lee, Osman and Elliott published a research paper, "Self-Reported Work Related Illnesses" This study surveyed 40,000 individuals and concluded that 6.8% of respondents estimated that they had a work related illness. Neil Davies and Paul Teasdale with the Economic Advisors Unit of the HSE published *The Costs to the British Economy of Work Accidents and Work-Related Ill Health* in 1994. This HSE book estimated the economic cost to individuals, employers and to society of work injuries and health problems caused by work. Mark Beatson, Chief Economist of the HSE prepared a paper, "The Use of Cost-Benefit Analysis Techniques in Setting Priorities for Health and Safety Management" in 1998 which reviewed the key features of cost-benefit analysis and showed how the technique can be used by industry and regulators including a critique of current practices in the U.K.

Most recently (1999) Jim Hillage of the Institute of Employment Studies, Sussex University published a book-length, research study for the HSE entitled, *The Economics of Safety: A Literature Review*. The Institute is also engaged in ongoing studies regarding economic influences on occupational accidents and ill health and an econometrics study of worker safety and health (Jones-Lee, 2000). Several other studies are proposed subject to the constraints of researchers and the funding levels of the HSE. To summarize, the ongoing and increasingly important field of the economics of safety and health is alive and well in the United Kingdom. Table 2 provides more detailed information about economic and safety performance.

FRANCE

French national characteristics and the more recent influences of the EU provide a basis for understanding occupational health and safety in France (Ecury, 1987; Bertrand, 1995; Goasquen and Bertrand, 1990; Moyen, 1992; Pham, 1989). The French Labor Codes established the Ministry of Labor and the Industrial Hygiene Commission at the turn of the century beginning the activities of the government in this area. The regulation of industrial locations began with the 1913 decree which first regulated safety, health and fire protection. More recent laws include an update in 1963 and comprehensive legislation in 1974 which regulates working conditions and established the Agence Nationale Pour l'Amelioration des Conditions de Travail (ANACT) to enforces these regulations.

Currently the Ministere de l'Emploi et de la Solidarite or Ministry of Employment and Unity (formerly the Ministry of Labor) headquartered in Paris regulates safety and health, administers social security which includes workers compensation and performs research and training. The Conseil Supoerieur de la Prevention des Risques Professionels (CSPRP) provides policy input and ANACT continues to establish and administer working conditions regulations. The Department Direction de la Securite Sociale administers social security including workers compensation. The Institut National de Recherche et de Securite Pour la Prevention des Accidents du Travail or National Research Institute for Accident Prevention (INRS) performs research and training functions. In 1982

labor and management input was required codifying practices and this approach is overseen by the Comites d'Hygiene, de Securite et des Conditions de Travail (CHSCT).

Harmonization of French activities with EU agreements regarding design and working conditions was achieved by legislation passed in 1989 and 1991 and through Eurogrip which coordinates the activities of EU risk prevention institutions. The Caisse Nationale de IAassurance Maladie (CNAM) and its subset, Direction des Risques Professionels (DRP) also located in Paris provide input by safety professionals. The Paris Comites d'Hygiene et de Securite of the Confederation Generale du Travail coordinates input from French trade unions.

INRS, the Institut National de Recherche et de Securite, identifies risk factors, develops methods of assessing dangerous conditions and their effects and performs research regarding ways to reduce and prevent accidents. To carry out its mission, the institute provides technical assistance, information, training and information through periodicals, documents, bulletins and other media as brochures films and the Internet.

A number of articles, books and studies published in France deal with the economics of safety. Earlier writings about the subject include the book, *Cost-Benefit Analysis and Occupation Safety*, by Wisnewski in 1980, Dumont's chapter on work accidents in the 1981 book, *Social Security Always Changing* and a series of articles in the journal, *Liaisons Sociales*. Duterlay and Lamouche wrote the article, "Estimates of Industrial Injuries: Indirect Cost or the Invisible Part of the Iceberg." and Ecury (1987) reviewed the costs of industrial injuries and occupational diseases in a monograph, *Economic Assessment of Industrial Safety*. Pram provided the methodology of calculating direct and indirect costs of industrial injuries in the 1988 and 1989 articles entitled, "Evaluation of Industrial Injury Indirect Cost" and "Direct and Indirect Cost of industrial Injuries." In two papers both entitled, "How to Evaluate the Safety Cost" Moyen (1992, 1993) critiqued the method of calculating indirect accident costs and concluded that it is difficult to determine whether prevention is a "good investment." Bertrand followed up a comprehensive doctoral thesis entitled, *The Cost of Industrial Injuries as Incentive to Prevention in Companies: A Microeconomic Approach*.

In summary, France is now fully integrated into the EU with legislation, institutions and even research comparable to that in other EU members. Table 2 provides information about key economic and work injury and fatality measures in France.

GERMANY

Germany legislated the first workers' compensation act and continues with well thought out safety requirements administered by efficient governmental institutions (Joki, 1983; Mertens, 1984b; Thielhoff, 1993). Pioneering quantitative research has been followed by ongoing well documented work (Kruger, Bachman, Klatt, and Ries, 1993; Mertens, 1984a).

An Imperial Proclamation published in 1881 followed by the first workers' compensation legislation in the world in 1884 provided financial incentives to reduce work injuries when payments to injured workers were required. Germany first legislated safety standards in 1889 and modified them over the years. In 1974 the comprehensive Arbeits Sicherheits Gesetz or Workplace Safety and Health Law modeled on the U.S. OSHA Act became law. The legislation established workplace standards including requirements designed to encourage safe work activities including mandated work councils or labor management safety committees.

Legislation is administered by the Bundesministerium für Arbeit und Sozialordnung or Ministry of Labor and Social Affairs headquartered in Berlin. There are two major administrative units within the Ministry which deal with safety and health. Unterabteilung IIB administers governmental programs regarding health and safety at work. Offices are located both in Bonn and Berlin. Responsibilities include input to proposed legislation, determining policy, technical works, inspections and occupational medicine. The Bundesanstalt für Arbeitsschutz und Arbeitsmedizin or Federal Institute for Occupational Safety and Health (BauA) is located in Dortmund and Berlin. The Institute performs and funds research studies, publishes results and performs training and educational activities including an annual German Occupational Safety and Health Exhibition. Governmental activities have been fully integrated into the EU.

Input is also provided by the insurance industry, professional societies and by labor unions. The more

than 100 insurance companies have formed the Industrial Mutual Accident Insurance Association. They are often organized into Berufsgenossenschaften or BGS groups which provide specialized risk management for the various industries. The Verein Deutscher Sicherheitsingenieure or Society of German Safety Engineers (VDSI) with about 5000 members was established in 1953 to encourage professionalism in the field. The German Union Confederation consists of various national trade unions as members including the large metal worker and historically strong steel workers' unions. The Health and Safety Department of the Confederation coordinates safety and health activities.

Compes (1965) performed a pioneering quantitative research study about the economics of safety and the results were published in his book entitled, *Industrial Accidents in an Economic Light: Toward Mitigating and Covering the Cost of Accidents in Industry*. The work, which utilized data from the steel industry, concluded that the optimal level of safety for a company is one in which the monetary cost of both work injuries and preventive activities is minimized.

Mertens (1984) published his two key works, *Making Work More Human* and "Problems with European European Reported Safety Statistics." Joki summarized research studies in a monograph, *The Economic Cost of Accidents at Work: 1980-1985, Report Number 328*.

German conceptual and quantitative research and case studies continue to be published in the 1990's. Kruger, Bachman, Klatt and Ries wrote *Indicators for Measuring the Macroeconomic Efficiency of Labor Protection* in 1993 and Mieles published the book, *The Necessity and Ways of Integrating Occupational Safety and Health into Production on an Equal Rank* in 1995. The proceedings of the European Conference on Costs and Benefits of Occupational Safety and Health held at the Hague in 1997 provide useful papers by Lehmann and Thielhoff, Kuhn, Coenen and Meffert and Zangemeister. The recent writings by Thielhoff of BauA, including his classic book entitled *Occupational Safety and Health as a Part of Effective Corporate Management*, continue to put Germany on the forefront of European OSH research and policy implementation. Table 2 provides overview economic and safety data.

CONCLUSION

Historic national differences and converging national similarities provide understandings of occupational safety and health in the EU, the United Kingdom, France and Germany. The British, utilizing a rich history of common law, have pioneered legislation regulating manufacturing safety and economic analysis, beginning with the work of Adam Smith, Marshall, Ricardo and Keynes. In addition, they have applied this form of economic analysis to OSH through works by Mishan and Jones-Lee and, with significant input from the U.S. OSHAct, have achieved good results. French legislation based upon the Napoleonic Code, institutional emphasis upon prevention, organizational emphasis upon worker involvement, national emphasis on integration into the EU and conceptual economic input have led to their

current OSH performance. Germany builds upon pioneering workers' compensation legislation, state organizational efficiency works councils of management and labor, and economic analysis emphasizing quantification to assume its leadership role in OSH on the continent. Themes influencing all European countries are the U.S. OSHAct, and its modification, Voluntary Protection Programs, which encourage voluntary organizational action, the implementation of agreements establishing the EU and the need to effectively compete for market share and business profits on a world basis. The scourges of work injuries and occupational diseases can and must be further reduced by the application of what we know and in response to those competitive economic pressures which encourage a healthy and efficient labor force.

TABLE 1 – KEY ECONOMIC & OSH DATA FOR MEMBERS OF THE EUROPEAN UNION

Country	GDP (billion\$)	Population	Work Fatalities	Work Fatalities/ 100,000
Austria	\$174	8 million	198	.08
Belgium	236	10	241	.06
Denmark	123	5	69	.03
Finland	102	5	74	.04
France	1320	59	1177	.08
Germany	1740	83	2396	.07
Greece	137	11	84	.05
Ireland	60	4	13	.01
Italy	1240	57	1366	.06
Luxemberg	13	4	18	.01
Netherlands	344	16	15	.02
Portugal	150	10	203	.05
Spain	642	39	1360	.13
Sweden	176	9	117	.04
United Kingdom	1240	59	638	.02
TOTALS	\$7697	375	7969	.05

Sources:

- A. Hoskin, *International Accident Facts*, Itasca, IL, National Safety Council, 1994.
- Editors, "HSE Issues Mid-Year Statistics" *Safety Management*, January 1999, p.3
- Editors, *World Almanac and Book of Facts 2000*, Mahwah, NJ, World Almanac Books, 2000

TABLE 2 – ECONOMIC AND OSH DATA FROM THE UNITED KINGDOM, FRANCE AND GERMANY

Statistic	United Kingdom	France	Germany
GDP in Billions of Dollars	\$1240	\$1320	\$1740
Population in Millions	59.1	58.9	82.9
GDP Per Capita in Dollars	\$21,200	\$22,700	\$20,800
Labor Force in Millions	28.2	25.5	38.7
Work Fatalities	638	1177	2396
Work Fatalities per 100,000 Workers	.02	.08	.07
Lost Workday Injuries in Thousands	180	913	1860
Lost Workday Rate per 100 Workers	.63	3.58	5.16

Sources:

- A. Hoskin, *International Accident Facts*, Itasca, IL, National Safety Council, 1994.
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PSYCHOTIC ORGANIZATION AS A METAPHORIC FRAME FOR THE SOCIO-ANALYSIS OF ORGANIZATIONAL AND INTERORGANIZATIONAL DYNAMICS¹

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“Psychosis, to which all human beings are prone, is the process whereby humans defend themselves from understanding the meaning and significance of reality, because they regard such knowing as painful. To do this, they use aspects of their mental functioning to destroy, in various degrees, the very process of thinking that would put them in touch with reality”

(Lawrence, 1999, p. 3).

ABSTRACT

The notion of the *pathological organization* provides a starting frame for better understanding irrationality and madness in organizations, profit and non-profit organizations alike. It has been used up to now by various psychoanalytic authors in their attempt to gain a better understanding of severe personality disturbances caused by pathological fixation, a splitting of bad and good parts or a liaison of fragments under the dominance of an omnipotent narcissistic personality structure. The concept originally referred to the narrow frame of individual ego-organization, but it is argued that the notion of the *psychotic organization* provides a useful metaphoric frame for application to social organizations. The attempt is made to apply the metaphor to various organizational and interorganizational contexts: the intraorganizational dynamics of hospitals, the interorganizational relatedness of the hostile takeover of an enterprise, and the increasing dominance of the shareholder value optimization in a global context. The attempt at ignoring and denying psychotic organizational dynamics is vain, resembling the futile efforts to escape a plague which is devastating the country - so lucidly described by Edgar Allan Poe (1980) in his story “The Mask of the Red Death”.

Keywords: pathological organization, socio-analysis of organization.

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INTRODUCTION

For some time, I have been preoccupied with various attempts to grasp at a better understanding of madness and other seemingly psychotic processes in organizations (Sievers, 1994, 1995a, 1995b, 1996a, 1996b, 1997, 1998b, 1999). Contrary to more traditional (and common) concepts of organizational research and theory, madness and psychosis had, for me, become guiding metaphors with which I felt I could gain a more meaningful understanding of what I experienced in organizational contexts, both as a member of organizations and in my various roles as researcher, consultant and, sometimes, as a manager. In face of the fact that organization literature (and practice) mainly expatriate the irrationality of organizational reality, I attempt to propagate a more serious concern for what can be described as the psychosocial dynamics of organizations.

The following thoughts are the attempt to share some of my insights from a broader work in progress in which I use the notion of the *psychotic organization* as a metaphoric frame for the study of organizational and interorganizational dynamics. After an introductory elaboration of what is meant by psychotic organization, the notion will be applied to three different organizational contexts, i.e. the internal world of an organization, the interrelatedness and the dynamic between organizations and the more global context in which both institutional investors and corporations seem to be caught in an optimization of their shareholders' value. – In order to avoid a possible misunderstanding, I would like to emphasize that I do not intend to refer to the concept of psychosis in the kind of pathological reduction which it has come to be used in psychiatry. As will be made more clear in the course of my argument, I am referring to an understanding of psychosis as, for example, was introduced by Melitta Schmideberg (1930), Melanie Klein's daughter, in her article "The Role of Psychotic Mechanisms in Cultural Development"; unlike Schmideberg, however, I do not share the assumption that the progress of civilization necessarily goes along with decreasing psychotic anxieties. "The reassurance that we live in an age of moral progress not only evidences presumptuousness, but also historical blindness. It is part of the mythology of modern civilization"

(Sofsky, 1996, p. 223). I am certain that Glass (1995) is right in expressing the conviction that "the psychotic narrative (...) in the modern world, is very real; it causes extraordinary damage" (p. 196). "It is becoming more difficult to discriminate between thinking that is psychotic and that which is non-psychotic" (Lawrence & Armstrong, 1998, p.55).

Elliot Jaques (1995a, 1995b) has explicitly denounced the psychoanalytic approach to understanding organization as dysfunctional, and it might seem to some readers that any further concern for psychotic dimensions in organizations must necessarily appear to be antiquated, and perhaps even futile. The following attempt at a deeper awareness and understanding of anxieties and their dynamics in and among organizations must, according to this view, inescapably seem like a poor scholar's desperate desire (or need) to treat everything as a nail simply because the only tool at his disposal is a hammer. I do, however, not share the belief in the end of organizational psychoanalysis. On the contrary, I am convinced that a concern for psychotic dynamics in and among organizations can help to get beyond the all too apparent notion of normality which more often than not "sustains and perpetuates a 'rational' madness (Lawrence, 1995b), a 'madness in normality' (Hoggett, 1992, p. 73), a 'pseudo-normality' (McDougall, 1974, p. 444), 'surface sanity' (LaBier, 1986, p. 62) and a 'pathology of normality' (Gruen, 1987, p. 20)" (Sievers, 1996b, p. 53).

Though the following remarks will appear fairly commonplace to some readers, I would like to emphasize two points: In the course of my argument I am neither concerned with the private inner world of particular individuals, nor do I regard psychosis primarily as a kind of disease which ought to be treated by psychotherapy in some manner or in some kind of institutional setting. What I refer to as *organizational psychosis* may be circumscribed by the question of whether and to what extent organizational dynamics are influenced or even initiated by unconscious psychotic reactions to the organizational environment. These psychotic reactions as expressions of underlying anxieties will be perceived as "socially induced rather than a product of the individual" (Lawrence, 1995a, p. 17; cf. Lawrence & Armstrong, 1998).

PSYCHOTIC ANXIETIES

Though Freud, especially in his later writings, “also became convinced of a proclivity for psychosis in us all” (O’Shaughnessy, 1992, p. 89), it is mainly through the work of Melanie Klein that the experience of anxieties of a psychotic nature is regarded as a constituent dimension of the normal development of infants, and equally constitutes a part of our adult world, rooted as it is in this early experience (Klein, 1952a, 1959). To acknowledge psychotic anxieties as a constituent part of the development of infants and of human development – and thus of life in general – doubtlessly contributes towards a depathologization of psychosis and its respective anxieties (Young, 1994, pp. 73; Tarnopolsky, Chesterman & Parshall, 1995). On the other hand, however, the acceptance of a normality of this kind does not in any way diminish the pain and suffering involved in the experience of being persecuted, retaliated and annihilated. The intensity and the extent to which the infant is normally preoccupied with psychotic anxieties and a responding aggressive sadism may often appear to be a fiction, an extreme over-exaggeration which ultimately invites the conclusion that the theory merely expresses the perversity of its author. This would be close to the reaction Klein was in fact confronted with by many of her psychoanalytic contemporaries (Young, 1994, pp. 79; cf. Rose, 1993).

The depathologization of psychosis in the Kleinian approach referred to above occurs more indirectly in so far as Melanie Klein with her preoedipal focus on the development of the infant indicated at quite an early stage of her writings that sadistic and psychotic tendencies and constellations are typical for the normal development and not primarily a symptom of mentally ill people. As Klein postulates, the psychotic experiences and tendencies become integrated into the ego in the course of normal development and thus balanced with less destructive and libidinal elements. Unlike in a pathological development, in which the integration and stabilization either fails partially or generally, the normal adult is not protected against repeated regression into these primitive psychic conditions and the defenses typical for the psychotic position in order to defend himself against the underlying anxieties and fantasies. Predominant among these defenses are denial, splitting, excessive forms of projection and introjection, identification, omnipotence, aggression and even sadism.

A short sketch of the two psychic positions on which Melanie Klein’s conception of the development of the infant is based may help the reader unfamiliar with them: In the first early phase of the development which Klein calls the *paranoid-schizoid position*, “the leading anxiety is that the persecutory object or objects will get inside the ego and overwhelm and annihilate both the ideal object and the self” (Segal, 1988, p. 26). Among the defenses of this phase, projections and introjections have a predominant significance. The splitting into good and bad objects going along with it is enforced with an increasing idealization of the ideal object, “in order to keep it far apart from the persecutory object and make it impervious to harm. Such extreme idealization is also connected with magic omnipotent denial. When persecution is too intense to be borne, it may be completely denied. Such magical denial is based on a phantasy of the total annihilation of the persecutors” (ibid., p. 27). Since the experience of the infant in the first two or three months in the paranoid-schizoid position is exclusively determined by persecutory anxieties and the vicious circle of retaliation and revenge, these psychotic anxieties are later, in the course of the normal development of the infant, worked through and integrated with feelings of love, care, guilt, responsibility and the desire for reconciliation typical for the *depressive position*. “In the depressive position, the object is loved in spite of its bad parts, whereas in the paranoid-schizoid position awareness of the bad parts changes the good object abruptly into a persecutor. Thus love can be sustained in the depressive position, giving the beginnings of stability” (Hinshelwood, 1991, p.141).

However, the early anxieties always remain part of the psyche. As they are somehow coined into the unconscious mind, these anxieties, in a metaphorical sense, remain the predominant currency through which the adult gives value to the reality of the outer world. Though organizations “are quite specifically and exquisitely designed to avoid consciously experiencing psychotic anxiety, (...) psychotic processes are in danger of breaking through from moment to moment” (Young, 1994, p.156).

It has, however, to be emphasized again that the two psychic positions should not be misunderstood as phases of development in the sense that reaching at the depressive position

would go along with an overcoming of the paranoid-schizoid one. The two positions remain equally latently present for the adult. Whereas the attaining and increasing stabilization of the depressive position is understood as maturity, regress into the paranoid-schizoid position and the paranoid defense against depressive anxieties is under certain objective or subjective conditions a more or less everyday experience even for the adult. "The attaining of the depressive position is a developmental step, an uncertain one, and one which is therefore a lifelong task" (Hinshelwood, 1991, p. 144).

PSYCHOTIC ORGANIZATION

In my attempt to conceptualize psychotic phenomena in organizations, I have found the notion of the *pathological organization* as developed in Kleinian psychoanalysis to be meaningful. Although this concept originally refers to the narrower frame of individual ego-organization, its application to social organization provides further insights which go beyond exclusively sociological attempts at understanding (Mueller-Lyer, 1914; Dreitzel, 1972; Tuerk, 1976).

Pathological organization as a term has been used by various psychoanalytic authors in their attempt to gain a better understanding of severe personality disturbances (Hinshelwood, 1991, pp. 381). It is (among others) based on Klein's (1952b) early observation that "if persecutory fears are very strong, and for this reason (...) the infant cannot work through the paranoid-schizoid position, the working through of the depressive position is in turn impeded. This failure may lead to a regressive reinforcing of persecutory fears and strengthen the fixation points for severe psychoses" (p. 294). O'Shaughnessy (1981), for example, with her concept of the *defensive organization*, emphasizes this pathological fixation to be observed among children who, because of a weak ego and the experience of extreme persecution anxieties, fail to enter the depressive position; their ego-development stagnates in the defensive mechanisms typical of the paranoid-schizoid position. Such stagnation either leads to an immature psychic equilibrium between the paranoid-schizoid and the depressive position or to an extremely narcissistic personality structure organized around omnipotent defensive mechanisms under the predominance of the death-

instinct. Based on Bion's (1957) differentiation of psychotic and non-psychotic parts of the personality and the splitting that goes along with this, Meltzer (1968) and Money-Kyrle (1969) have described the internal quarrel among the healthy and sick parts of the self. More often than not this results in projecting the latter into the outer world of the environment (Segal, 1956). Rather than by a splitting of bad and good parts, Steiner (1979, 1982, 1987, 1990, 1993), on the other hand, emphasizes that pathological organizations are mainly characterized by a kind of *liaison of fragments* under the dominance of an omnipotent narcissistic personality structure which itself is the result of failed splitting.

As Simmel (1946/1980, p. 288) indicates, it is this dominance of narcissistic self-love and its inherent megalomania which prevent the psychotic from acknowledging any defeat in his or her struggle with reality. The inability to experience and acknowledge guilt is substituted by aggressivity.

Whereas Steiner regards pathological organizations as an expression of destructivity, they represent on the other hand the attempt to bind some of the threats typical for primitive destructiveness. To the extent that a pathological organization defends the individual against feelings of mourning and guilt, it protects against the experience of the depressive position. Above all, it is the negation of the defense against the experience of mourning which both causes and sustains the *liaison of fragments* which is characteristic for pathological organizations. This *liaison*, as Hinshelwood (1991) indicates, "creates a complex affair in which healthy parts of the personality are induced into colluding knowingly with purposes that are felt to be destructive, and thus are perversely used to masquerade as health" (p. 385).

As already indicated in the title of this contribution, I am suggesting the *psychotic organization* as a metaphoric frame for the further socio-analysis of organizations (Bain, 1998). Though I feel a certain uneasiness with this concept – particularly in relation to social phenomena – due to the traditional clinical pathological implications of psychosis (Young, 1994, pp. 76), it is, on the other hand, the notion of psychotic anxiety as the in-between-state of the paranoid-schizoid and the depressive position which challenges me to use the notion of the psychotic organization at least for the time being. I am especially encouraged in

this choice by Fornari (1975), an Italian psychoanalyst, who in his "Psychoanalysis of War" anticipated most of the major insights of what some time later was conceptualized as the theory of pathological organization.

Like Bion and the early Jaques (1953, 1955; cf. Menzies Lyth, 1960/1988a), Fornari chooses the important role the defense against psychotic anxieties plays in the formation of society and its institutions as his point of departure. Based on the assumption that the psychotic dimension of group life finds its most glamorous realization in the war phenomenon, Fornari emphasizes the inability to mourn, i.e. the paranoid elaboration of mourning, as the critical dynamic (or factor) of war as a psychotic kind of social organization. In comparison, for example, to Steiner (1979, p. 389, 1990, 1993), whose view is limited to the obstacles to mourning in the pathological organization of the borderline patient, i.e. the individual, Fornari's analysis of the psychotic dimensions of war includes a fundamental relatedness of the individual and the social. Unlike Steiner, who refers to a liaison of fragments under the dominance of an omnipotent narcissistic personality, Fornari's theory is implicitly based on a pathological fixation and stagnation in the paranoid-schizoid position and its defenses similar to what O'Shaughnessy (1981) some time later conceptualized as the defensive organization.

The fact that I am referring to the psychotic organization as a metaphoric frame is mainly because I would like to avoid entering into a broader epistemological argument as to whether or not and if so to what extent conceptualizations originating from the psychoanalysis of the individual can be transferred or translated to the broader context of social organizations (cf. Elieli, 1994; Eisold, 1997; Erlich, 1998; Lawrence, 1997). I would prefer here to stick to a more pragmatic position in order to find out what insights can be generated if one assumes that social organizations (particularly enterprises) are psychotic organizations (Morgan, 1986).

Similar to the way in which patients with severe personality disturbances often do not appear to be very psychotic, but rather give the impression that they have fixed their disorder on a certain level, social organizations, and profit-oriented organizations in particular, often seem to cover their internal anxiety level with a somehow curious, but nevertheless normal appearance. As an external observer or consultant to large corporations, I

often have the impression that these organizations are stuck in the predominant attempt to defend against the apparent threat and persecution emanating from the outer world of markets and competitors which they at the same time tend to dominate and control with a high degree of aggression, sadism and destructivity. In cases like these, it seems to me that the psychic dynamic of the organization is caught in a behavior and a way of thinking which are typical of the paranoid-schizoid position. In face of the on-going struggle for excellence, growth and survival and the attempt to gain greater market shares, there seems to be almost no capacity for the depressive position and its anxieties. As the concern for good objects of the inner or outer world is missing, the predominant destructiveness and aggression seem to leave no space for the experience of guilt, the desire for love, mourning or reparation typical of the depressive position. The external world and reality thus become shaped and reduced by the inner psychotic anxieties and respective defense mechanisms.

TOTALITARIAN STATES-OF-MIND

On another occasion I attempted to elaborate the extent to which both the foundation myth and the present business policy of a leading German car manufacturer are unconsciously influenced if not determined by war and warfare (Sievers, 1998a). Here, I have chosen another example from the literature to indicate how the internal reality of an organization may be dominated by a psychotic dynamic: Lawrence's (1995a) seminal analysis of how the role holders in British health care systems – and above all their managements – have been drawn into "the seductiveness of totalitarian states-of-mind" (p. 11).

Recent radical changes in the National Health System have put health care under enormous political and economic pressure, and the people working in it have become "subject to stress and anxieties of an unprecedented intensity (...) Managements are pressed into developing management structures which emphasize predictability, certainty and control. [Guided by] the fantasy that a system of tight managerial control emphasizing sureness of boundaries will banish the anxieties and keep environment uncertainty at bay" (ibid., p. 11) they are confirming the predominant hubris of management (Gabriel, 1998).

The more the future survival of a hospital becomes an almost exclusively financial and economic issue, the more management is legitimated, forced to and even supported in its implementation and execution of the standard repertoire of improving profitability by cutting costs and employees, by speeding up health production processes through reductions in the patients' length of stay, thus increasing the amount of accommodation available and the speed of processing. Legitimated by their own professional instrumentality, management ultimately (consciously and unconsciously) identifies with the role of the surgeon, who often has little choice as to whether to manipulate or amputate parts of the body in order to save the patient's health and secure his or her survival. The more management thus feels mobilized and legitimated to set the tone and to determine the choice of appropriate instruments and structures, the more it enforces other role holders collectively to submit to "authoritarian, organizational cultures which generate what I am calling a 'totalitarian state-of-mind' in the participants in the institution" (Lawrence, 1995a, p 11; cf. Stein, 1995, 1997b).

The more the psychotic dynamic of health care systems dominates, the more these organizations are engaged in a liaison similar to that described by Steiner in the case of a pathological organization of the individual: the inherent destructiveness has to be hidden behind the mask of health. For Lawrence (1995a), the corollary of this is as obvious as it is striking:

Such an organizational culture diminishes the capacity for thinking and feeling and so role holders become less able to reflect on the nature, quality and methods used to execute the task of their institution, its place in its environment, and how the management structures may be distorting their professional values and beliefs about the work of the institution. The complexities of delivering health care have been reduced to the commercial concerns of an enterprise culture. This results in people having a frame of mind which can only encompass the immediate and the short term. Reality becomes reduced to profit and loss. There are fears about unemployment and so the psychic preoccupation of role holders comes to be focused on their individual survival. They,

thus, become entrapped in the inner, political life of the institution and the larger issues of the place of spirituality in the institution are deemed irrelevant (p. 11).

A health care system serves as a social system of defense against death (Menzies Lyth, 1988a), and this has obviously been the case in a predominant way for the National Health System in Britain since 1948. The more the role holders in the NHS introjected the wishes and hopes of British citizens that they could avoid death, the less they and the Government were able to provide the financial resources to sustain the highest standard health system the world has ever known. The solution to the problem in Britain does not differ fundamentally from the measures most health care institutions in other industrial countries are expected to take in response to ongoing governmental health reforms.

[It] came from the belief that if only hospitals etc. were like businesses, subject to the market economy, there would be no problem. In short, a contemporary version of a capitalist thought was sought for a solution to a problem which was essentially social. As part of this solution, the idea of 'management' was introduced. That would save the situation! If only hospitals could be like biscuit factories or a light engineering company or an abattoir there would be no problem, it came to be believed (Lawrence, 1995a, p.12).

What for some may appear as a rather cynical attempt on behalf of the author to distance himself from an otherwise unbearable reality, is, in this particular case, not even an over-exaggeration. Lawrence has told me (in private conversation) how embarrassed he was when, as a consultant to hospital management recruitment he experienced several applications from former slaughterhouse managers who had been made redundant as a result of the increasing rationalizations within their industry. These were only the peak of many other management applicants who confirmed the increasingly widespread belief that hospital management is primarily about monitoring a throughput process of patients - getting them out either as convalescents or cadavers. The organizational reality (and meaning) is reduced to the discourse

of strategy (Knights & Morgan, 1991, p. 260) and accountancy issues: "What cannot be reduced to numbers cannot be managed and therefore is not worthy of attention" (Bowles, 1997, p. 793). Survival thus is nothing more than the difference between loss and surplus, and the decision on the future of a particular hospital can easily be dealt with on a binary code basis: it "either stays in business or it finishes trading" (Lawrence, 1995a, p. 13).

It definitely would go beyond the frame of this contribution to elaborate in detail how health care management in the attempt to defend against anxieties of a paranoid-schizoid kind gets caught in a psychotic dynamic and at the same time perpetuates it in a vicious circle. As the management of a health system becomes the major and final representation of organizational health and survival, it becomes the unconscious object of endless projections about death from the medical and nursing staff, the patients (and their relatives) as well as from the surrounding community. But since these projections predominantly mirror the psychotic state of the respective role holders and individuals and their split off anxieties about illness, suffering, despair and annihilation, they cannot be contained by a management which either tacitly or expressly denies the existence of these psychotic anxieties in themselves. As such a denial will not serve as a final defense against the fantasy and the experience of being persecuted, management is forced to react from a paranoid-schizoid position. Through splitting, which is a prominent strategy of this state, they are both tempted and seduced into identifying with idealized commercial management, which thus appears as the only solution for both their individual and organizational survival.

It almost seems that once this vicious circle of psychotic reactions and projections has started in a health organization, management has no options other than to resort to means of rigidity, reification and ultimately to the terror of a totalitarian state-of-mind which, as Ewen (1980) indicates, is "the moral economy of war" (p. 81). This is above all the outcome of mutually collusive social processes, "grounded in the social defenses against psychotic anxieties, to make managers more paranoid and schizoid than they would be in another context" (Lawrence, 1995a, p.17).

That management in health care thus gets caught in the paranoid-schizoid position and represents the psychotic part or subsystem of an organization has further leading consequences. As management both declares itself to be and is regarded by others as the only organizational authority which is believed to make decisions, it comes "to bring into being cultures of dependency. They tend to over-control, to guard against what they see as unnecessary expenditure and, generally, create an organizational climate in which initiative is frowned upon. The obsessive desire for control – and the wish to keep uncertainty and unpredictability at a distance – results in organizations which become near totalitarian" (ibid., p. 18). "The resultant totalitarian state-of-mind of the organizational culture is subscribed to because it offers relief temporarily from psychotic anxieties" (Lawrence, 1998, p. 64).

To the extent that this kind of political consequence necessarily excludes any transcendence of "the immediacies of accountancy, cost-effectiveness, and efficiency" (Lawrence, 1995a, p. 18), a totalitarian minded management and organization annihilates any need for spirituality in a collective attempt to find meaning for a value which - at least in the past - distinguished health care systems from repair shops and abattoirs.

INTERORGANIZATIONAL PSYCHOSIS

Psychotic dynamics do not just have a strong influence on the internal world of an organization, its main protagonists and the way in which they convert the primary task into a means of mere survival. The extent to which psychotic anxieties and psycho-social dynamics actually have an impact on the macro level of an increasingly globalized economy recently became obvious to me during the first at-tempt at an unfriendly takeover among two large German corporations in the early spring of 1997.

After being competitors in the steel industry for more than one hundred years, Krupp, with the help of two major German banks, attempted to buy a critical number of Thyssen shares, thereby in effect taking over its far bigger rival in both the national and international markets. The unfriendly takeover ultimately failed for various reasons, but the variety and intensity of reactions it gave raise to among

entrepreneurs, workers, their union representatives, politicians and in the media were unprecedented in the recent history of German industry and economics. They clearly evidenced the extent to which the attempt at an unfriendly takeover, a phenomenon not known in Germany up to this point, had mobilized un-conscious fantasies of annihilation on the side of both employers and employees. It somehow seemed as if – after the end of the Cold War and the mortal threat from the East – one suddenly had to face the enemy from the West in the form of hostile mergers and acquisitions known up to then only from the US. Gerhard Cromme, the Chairman of Krupp's Board and main initiator of the takeover, was publicly attacked as an irresponsible executive who, similar to American raiders of the eighties, pursued the goal of confirming his own power, thereby running the risk of cannibalizing his greatest competitor and transforming the Ruhr district into a German Dallas nightmare in the process.

There is a variety of reasons for the lack of any significant attempts at unfriendly takeovers in Germany up to this point and why this particular Krupp/Thyssen venture ended unsuccessfully. In addition to the dominant role played in the economy by the leading German banks and the intense financial links between companies (Scott, 1997, p. 4, p. 17; Black, Wright, Badman & Davis, 1998, p. 206), the fact that the majority of pension savings in Germany have been traditionally managed and provided by a federal agency of the (welfare) state has tended to reduce the amount of floating capital in the hands of pension and investment funds.

On the other hand, this particular German time-lag in relation to the ongoing trend of economic globalization offers a special opportunity to become more aware of the probably generally underlying psychotic dimensions of unfriendly takeovers. The anxieties - and the defenses going along with these - are not yet covered by the usual business routine of a normality whose underlying madness is referred to as rationality.

In this particular case, both the reactions from Thyssen employees who would have been directly affected, as well as public reactions from politicians and the media made it quite clear that the usually used term of an "unfriendly takeover" really is an euphemism which serves to deceive and mystify the underlying violence, aggression and

destructivity (cf. Stein, 1995, 1997a, 1998). This attempt was publicly referred to from the very beginning as a "hostile takeover" and clearly delineated the close relationship to war and warfare, i.e. to the cruel and destructive aggression of the attacker and the fear of the vic-tims that they might be destroyed by their persecutors. Although Gerhard Cromme and Dieter Vogel, the two CEOs involved, had been rivals for some years, it would be too easy to explain the attempted coup primarily in terms of a personal feud. It obviously cannot be understood without a broader reference to the newly emerging global business logic and the installation of ever more illusory business realities, which are increasingly referred to as virtuality. Important for this episode was also the fact that both protagonists seem to have been unconsciously acting out a history of competition between the two giants which began more than a century before when the companies were first founded by the steel barons Alfred Krupp and August Thyssen in the 19th century. Though neither of the two companies is in family ownership, their histories and development have been very strongly influenced by the ongoing bids made by the original founders and their successors for supremacy in the Ruhr district and the world markets. Alfred Krupp and his successors had a major impact on the industrial revolution in Germany, soon gaining widespread recognition as one of the leading weapon producers in Europe, and this remained the case till the end of World War II. August Thyssen, on the other hand, had developed his dynasty mainly through acquisitions and buyouts (Pritzkolet, 1957, pp. 342, pp. 431). This did not, however, prevent the Thyssen company, full of indignation and apparent innocence, from claiming that recent takeover attempts were a unique and unprecedented scandal. As a matter of fact, the phenomenon had been a predominant dynamic of the corporation since its early beginnings. The history of Thyssen can be interpreted as a history of almost endless greed with which the founder and his temporary business partner Hugo Stinnes incorporated countless other firms by means of mergers or hostile takeovers. Stinnes was known as a "firm hunter" who, through financial shrewdness and manipulation, owned shares in 4554 companies ("Crash im Revier", 1997, p. 98; Chandler, 1990, p. 509).

Though Krupp enjoyed the better reputation for many decades, Thyssen, especially after the Second World War, grew faster in terms of size, turnover and profits. Both companies face serious structural problems due to the decline of demand for steel and coal products in Germany and rapidly falling world prices, and it has been evident for some time that of the two companies Krupp would not survive the near future unless it entered into a partnership or some kind of cooperation with a competitor, such as of the kind agreed when Hoesch was integrated into the group in 1992.

The fact that Cromme, the Krupp-Hoesch CEO, had been nominated “manager of the year” in 1992 may well have contributed to the pressure he was expected to cope with in his managerial role. The mere thought that a man who had taken over the top management role of a world-renowned company like Krupp with the declared intention of leading it successfully into the next millennium, and who had made such a promising start in this new job would soon have to knock on the door of his greatest rival and beg for admission or that he might even have to declare bankruptcy must have been utterly unbearable for everyone, from Cromme himself and his management colleagues through to Krupp’s shopfloor workers and even to the broader public. In face of the mortal threat posed by Krupp’s – and his own – predictable future, Cromme appears to have been challenged to act as a national- and indeed as a world-management champion. To prove his eligibility for world championship, his part was to play through the game which global players act out in their rivalry against Thyssen. With the help of the banks, Cromme organized a carefully designed, hidden scenario which - in a kind of *fait accompli* - would allow him to inflict a final, lethal blow on Thyssen. This would not only have meant an end to the rivalry between Cromme and Vogel but, even more so, on a metaphorical level, the end of a brotherly quarrel between the two steel barons Alfred Krupp and August Thyssen, with the elder of the two winning out in the end.

The above sketch of the first publicly known attempt at an unfriendly takeover in Germany provides us with adequate evidence for the appearance of psychotic tendencies and dynamics both at Krupp-Hoesch and also at the interorganizational interface between the two rivals. The structural changes of the international

coal and steel market over the last decades meant that both companies increasingly struggled for survival. In previous times of prosperity right into the seventies and early eighties, the two companies got along quite well with each other as competitors, each maintaining reasonable market shares. This situation dramatically changed in recent years. As neither company belonged any longer to the ten major steel producers in the world, they were thrown back on their old roles as rivals. In comparison to Thyssen, Krupp produced only half the amount of steel; it had long since and irrevocably lost its leading position and increasingly faced a thoroughly disastrous situation. Production costs for steel had gone beyond earnings, and Krupp was making substantial losses with steel. Necessary investments had been postponed for far too long. These factors themselves are probably enough to explain the psychotic escalation on Krupp’s side, the mortal anxieties and the fear of being swallowed in the near future by Thyssen.

In face of the psychotic anxieties and the inherent typical defenses sketched above the hostile takeover, initiated by Cromme, can be seen as a denial of the apparent threat and the annihilation anxieties going along with it (Moses, 1996) – the safeguarding of Krupp’s future as an enterprise is seen exclusively in the annihilation and the devouring of the competitor, who had been experienced as a “persecutor” for many years. The unmistakable elemental threat of being taken over and swallowed by the persecutor caused Krupp to hide the underlying aggressivity, destructivity and sadism behind a strategy of apparently rational business routine. The actual ambivalence of such a strategy, which despite the intended success and profit of the planned solution also has to be understood as the smashing up of a corporation full of tradition and international relevance and the annihilation of countless jobs, had to be denied via splitting. Because the intended strategy was perceived as a panacea whose probable self-destructive implications were ignored, the internal conflict on Krupp’s side and the fear of its own decline could be externalized and turned into aggressivity towards the external world. Unlike Thyssen, which appeared as a bad and to-be-annihilated-object the banks involved in the coup took on the role of good, idealized objects. The attempt towards a hostile takeover and the omnipotence fantasies going along with it might have been accompanied not least by the

unconscious desire of taking vengeance via annihilation for the injuries felt in decades of competition. Like psychotic anxieties in general, the inherent anxieties of this takeover attempt can be understood as being derived from the activity of the death instinct (Hinshelwood, 1991, p. 122).

A further factor which contributed to the escalation was that Cromme had repeatedly attempted to find negotiable and agreeable ways for a merger of the two giants, but that these had been continuously rejected. Driven into the corner of foreseeable death, it would seem that Cromme, in his top executive role, saw no other choice other than to fall back on a psychotic solution, i.e. to attack the rival and hope for the latter's definitive defeat. It is not surprising in view of the loss of reality that Cromme and the few people who had been let in on this strategy believed they had found the appropriate means - or the cure - in the model of an unfriendly takeover. The narrowness and the rigidity with which this strategy was pursued are a further expression of psychosis, in which the capacity for intuitive knowledge and thinking are destroyed. And as the loss of reality in psychosis usually goes along with extreme narcissism (Fromm, 1968, p. 66), it can be assumed that the narcissistic investment in the top executive role in Cromme's case colluded with the social dynamic embedded in Krupp's history through its founders and former owners (Baersch, 1983; Calogeras, 1987).

The psychosis hypothesis for the intended takeover is further supported by the degree of destructiveness on which the financial strategy of the coup was based. The acquisition of a share majority in Thyssen would have required some nine billion deutschmarks, which would have financed itself. Before Cromme's rival even knew what his strategy was, "the victim had already been dissected and eviscerated on the banks' computers" ("Crash im Revier", 1997, p. 95). In addition to the expected savings through the merger of the two steel production operations, the larger portion of earnings was to be realized through the sale of smaller companies, shares and real property previously owned either by Krupp or Thyssen. It strikes me in this context that the language of this strategy, i.e. the slaughter and the abattoir are almost the same as in the management recruitment process for a hospital described above by

Lawrence (1995a). The language used also invites associations with Melanie Klein's (1932/1975, p. 31) description of the infantile attacks on the mother's body in early situations of psychotic anxiety. Led by the unconscious fantasy that the mother will persecute it because of its own aggressive impulses to kill her and to steal from her, the infant is driven by an "extreme aggression against the inside of mother's body, with the consequent fear of retaliation by mother and father, whose penis resides within the attacked body of mother and who is also attacked for his residence there" (Hinshelwood, 1991, p. 116). Similarly to the way in which the infant tends to destroy the body of the mother and the inside contents in form of her (future) babies, Cromme's (and his banks') strategy was based on the plan of separating the mother companies from a respective number of "daughters" by selling them or shutting them down, thus leaving them to a very uncertain fate. The unwavering confidence with which this strategy was to be pursued can be interpreted as the idealization of the omnipotent destructive parts of the self (Rosenfeld, 1987, p. 106). All this is usually hidden behind the language of rationality and its supposed evidence: "If growth carrier and 'cash provider' will be optimally combined and peripheral activities are corrected then the profitability and the shareholder value will increase with lasting effect. (...) Sacred cows must no longer exist" (Cromme, 1998, p. 25).

The final consequences of the attempted unfriendly takeover demonstrate the inadequacy and disastrous failure of the underlying psychotic strategy. In the end it proved possible, not least through the intervention of the government of the federal state most affected, to merge parts of the firms, the two steel activities, into a newly founded Thyssen-Krupp steel corporation. From what has become publicly known so far (Rieker, 1997), it would seem that the Thyssen steel division had already developed its own strategy for a future merger of the two steel giants long before the failed takeover, and that they have been able to enforce major elements of their strategy against the interest of Krupp. The result has been that Krupp-Hoesch not only has less influence in the new joint venture but, due to its outdated steel production facilities, also has to carry the higher financial risk.

In retrospect it would appear that the hefty public reaction and the extreme attacks on Krupp-Hoesch, and on Gerhard Cromme in particular, must be interpreted as equally psychotic. It is as if the unforeseeable echo from various parts of the German public served to end the psychotic attempt to escape mortal fear by tricking the persecutor. It was the cacophony of judgmental voices and opinions from the outside environment which ultimately proved the cleverly constructed order and the fantasized strategy to be false.

On the other hand, however, it can be assumed that the really critical episode which converted an otherwise common-place business strategy to disaster was the fact that, for whatever reason and through whatever channels, the strategy simply became public too early. Though the alternative cannot be proven, the possibility that this first attempt at an unfriendly takeover in Germany might have succeeded if it had been successfully concealed until preparation had been finalized cannot be entirely excluded. A takeover strategy which, in the present context, appears to have been driven by immense and unconscious psychotic anxieties, would in the case of its success, have hardly presented itself as anything more than a cacophonous disturbance and reframing of the previously taken-for-granted conviction that the German situation does not allow unfriendly takeovers in the American style.

At first sight, the newly founded Thyssen/Krupp steel corporation appeared to be the final, successful solution of the quarrel which had been initiated by the intended unfriendly takeover during early spring of 1997. Subsequently, however, only half a year later, it seemed more like a prologue to what then turned into a much more extended drama. Considerations for a total merger of the two corporations were first announced by Guenter Vogelsang, the 77 year old Honorary Chairman of Thyssen's Supervisory Board, and Berthold Beitz, 84, the head of the Krupp Foundation which owns 51 % of Krupp-Hoesch shares. What initially was to be accomplished relatively easily and in a short time (because of its apparently overwhelming economic logic) turned into a major adventure. For some time it looked as if it would end in disaster and the abandonment of the planned merger; later final elaboration of the details was to take about a year till the autumn of 1998; this was recently postponed again to the spring of 1999.

PSYCHOSIS UNLIMITED

As already indicated at the beginning, psychotic organizational dynamics are not exclusively limited to the internal world of an organization or its immediate interface with its competitors, suppliers or customers. Psychotic phenomena and dynamics appear increasingly to dominate the broader business world in a more global context. Though this is apparently the case for the international financial markets in general, where unimaginable amounts of money are transferred daily and where the news about booms and dramatic crises come thick and fast, I would like to focus here on the increasing tendency towards shareholder value optimization in which both institutional investors and corporations would seem increasingly and inescapably to be caught.

The more I try to understand the dramatic changes in what social scientists and theorists of organization and management are used to refer to as the environment of business enterprises and its turbulence (cf. Mintzberg 1994, p. 203), the more I am confronted with my own inadequacy and impotence as far as my knowledge and competence for an appropriate understanding and analysis of these new phenomena are concerned. I also become increasingly scared by the conspicuous brutality and destructiveness through which organizations – and enterprises in particular – are reduced to mere commodities by the international giants of corporate investment and pension funds.

Based on the conviction that a company's profit can no longer be taken as the appropriate measure of the yield a shareholder will receive for money invested, the shareholder value orientation suggests that a company's cash flow, and the free cash flow in particular, has to be regarded as the more adequate measure of profitability (cf. Rappaport, 1986; Black et al., 1998). Contrary to the conviction prevailing up to now that the value of an enterprise, in addition to its monetary profit, consisted of its contribution to a national economy, the living of its employees, the meaning of its products and a responsible use of resources, the increasing dominance of the shareholder orientation reduces the world economy to a monopoly-like international money game. Whereas some two decades ago the ultimate product of work was still considered to be people (Herbst, 1974; Sievers, 1990), work in the not too far future

only seems to serve as a means for the money which can be transferred to the shareholders after all other costs, including the costs for labor, have been deducted.

What strikes me in the present context are the Midas-like implications for a corporation which, touched by its shareholders and the institutional investors, turns into gold – or at least into money. The exclusively monetary orientation of the current predominant ‘cult of the share’ is based on a staggering loss of reality via reification. In so far as money not only becomes a value in itself, but the ultimate value, which relegates all other values into mere opinions or ideologies, money loses its symbolic quality, “it is treated almost as a thing in itself” (Menzies Lyth, 1988b, p. 210). “The belief in market forces and capitalism has caused managers to think of their institutions as only having the purpose of making or saving money. This primary task has supplanted the idea that any enterprise exists to perform work oriented tasks” (Lawrence, 1998, p. 68). In the context of the shareholder value debate, the reduction of an enterprise’s value to a supposedly objective monetary value might appear as a major accomplishment, an *ultima ratio*, but in a broader frame it has to be perceived as a reduction of a much more complex reality. For shareholders in general, and for shareholder conglomerates such as the investment and pension funds in particular, any other notion or quality of an enterprise is obsolete. According to the underlying conviction, money is no longer supposed to be increased by buying or selling products or services but just as money in itself. As Fromm (1977; cf. Harsch, 1995, p. 95), however, has indicated, the desire inherent in the Midas myth of turning everything into money can from a psychoanalytic perspective be interpreted as destruction.

The increasing dominance of the shareholder value orientation also leads to major changes in the meaning of management and work. As the new generation of top managers has no choice other than to adapt to the triumphant progress of the share culture, they not only lose the autonomy as entrepreneurs which they, especially in Germany, traditionally had; in confirming their faith in the belief that the most important task of a corporation’s top management is to meet shareholders’ expectations and direct business strategy towards the achievement of the highest

possible value for the enterprise, they are increasingly turned into mere henchmen of the major institutional investors and their managements.

The predominating shareholder value orientation also enforces a high degree of rationalization in the sense that jobs are either made redundant or transferred abroad, where labor costs are cheaper; it tentatively goes along with a high devaluation of work. Because of the fast growing world population and the disappearance of trade barriers, we are increasingly running the risk that a high amount of human work soon will become extremely cheap. “And those who are paid like dirt, will, sooner or later, find themselves in the mire” (Afheldt, as cited in Martens, 1996, p. 21).

Contrary to the most common evaluation of the ongoing globalization of major global players and their high priests, the neoliberal economists, it would seem to me that the increasing tendency towards shareholder value optimization and the predominance of financial markets go along with a globalization of psychotic anxieties which are unconsciously managed, maintained and increased by the various referent systems and their respective role holders.

Instead of regarding money and capital in particular as a *per se* neutral means or an evaluator, I am convinced that the transfer of money in the context of institutional investors cannot be adequately understood without a deeper awareness and understanding of the transferences which mainly unconsciously go along with it. The hypothesis which I am increasingly concerned about refers to the potentially psychotic undercurrent of the money invested into funds. As individual investors, by the very fact of their investment, project and displace part of their anxieties, greed and fantasies of unlimited prosperity into institutional investors, the managements of these financial corporations not only feel mobilized as trustees – acting on behalf of their investors – but also take over parts of these unconscious fantasies and anxieties via introjection. In legitimizing themselves in their management roles as representatives and advocates of masses of investors, they are not only tempted to oscillate their own anxieties of a psychotic kind, but are additionally mobilized to transfer the introjected fantasies and anxieties together with the money/capital which they as

shareholders are investing into other corporations. As the prevalence of psychotic anxieties both on the side of private and institutional investors goes along with psychotic thinking, they unconsciously come to bring into being corporate strategies which predominantly serve the purpose of keeping the underlying psychotic anxieties at bay. Through favoring a shareholder value optimization in the corporations under their control, they increasingly intensify fantasies of persecution and annihilation and nurture the fear among these corporations' managements and their employees of being at their shareholders' mercy. The rigidity and brutality with which the strategies for cash flow increase are enforced tend to be hidden behind a rationality which is typical for psychotic thinking: It is the *thinking* of the markets which allows no alternative to paying the necessary tribute to the shareholders (e.g. Black et al., 1998, p. 8).

Though I have to admit that my attempts at understanding the implications of growing globalization for the future of contemporary enterprises and organizations are accompanied more often than not by an experience of inadequacy and despair, I am at the same time convinced that an increasing number of the real actors and players in the world monopoly are lacking any appropriate understanding of the game they are taking part in for the exclusive sake of multiplication of capital and power. It appears to me that Schumpeter's (1943, p. 83) famous dictum that *creative destruction* is at the core of capitalism not only serves as a license for rational destructiveness, but is becoming more and more perverted into the notion of *destructive creativity*.

INSTEAD OF A CONCLUSION

What has been stated so far necessarily must appear as a sketch or even a torso. I hope, however, that the thoughts on the psychotic organization and their applications to the three different organizational contexts – intra-, interorganizational and global – has demonstrated both the general usefulness of such a venture and the fact that this way of thinking will serve as program for my own further reflections and research. A German journalist referring to the broader context of the world's stock markets recently stated that the present turmoil and euphoria "is a case for psychoanalysts rather than for economists" ("Euphorischer Nebel",

1998, p. 88). This has become obvious for me in my work in this area. However, instead of reducing this argument to psychotherapeutic treatment, which in this particular context would be most futile, I would like instead to make a case for the argument that I regard the psychotic dynamics in contemporary organizations and the increasingly global markets as prominent cases for the psychoanalytic study of organizations. And I hope that my contribution may encourage other scholars to embark on the journey into this still unknown territory or even on to newer continents. A journey of this kind into the heart of organizational darkness confronts the researcher with almost the same restrictions as his predecessors, the travelling scientist and explorer of previous centuries: reliable maps are not available and there are not very many equally minded companions who will be prepared to take on the strain of the adventure.

Encouragement for a journey into the darkness is mediated by the awareness of light and twilight and the conviction that there are other dimensions of contemporary organizational reality which are apparently more visible and/or enjoyable to investigate. As the use of the metaphor of the psychotic organization, like the use of metaphor in general, is based on the assumption that every way of seeing is a way of not seeing, the notion of the psychotic organization in addition to other conceptualizations or metaphors may help us to reach a more holistic and as such a more 'real' imagination of what it means to work and live in organizations.

Excluding and neglecting the suggested perspective on organizational reality would equal to me the futile attempt to escape the pestilence which Edgar Allan Poe (1980), so dramatically described more than one hundred and fifty years ago in "The Masque of the Red Death". In this tale, Poe describes the attempt of Prince Prospero who, somewhere in the Middle Ages, together with a thousand friends from among the knights and dames of his court retired to the deep seclusion of one of his castled abbeys in order to escape the plague which was devastating his country. Not caring any more about what was going on in the outer world, they lived in pleasure, luxury and security. Half a year later, however, on the occasion of a masked ball of the most unusual magnificence, the totally unexpected and desperately avoided reality broke in as the great

festival collapsed. A new masquerader, an uninvited figure in blood-dabbed grave cloths turned out to be the Red Death itself. And “darkness and decay and the Red Death, [which they had so carefully attempted to expatriate, eventually] held illimitable dominion over all” (ibid., p. 141).

In parts, there is so much congruence between Poe’s language in the tale and psychoanalytic conceptualizations of organizational psychosis that the two different texts – despite their entirely different qualities as fiction and as science and their different times of publication – can almost be considered as exchangeable. Written long before psychoanalysis reached the state of a science, Poe’s “Masque of the Red Death” appears to me to be a masterpiece of a ‘case study’ on psychotic organizations. It is the description of how the members of an organization managed their obsessive desire for control and the wish to keep uncertainty, unpredictability and death at bay. By retiring into the castled abbey, they split off the scaring part of reality from which they wanted to escape. Convinced that “the external world could take care of itself (...) it was folly to grieve, or to think” (ibid., p. 136). Led by their own mortal anxieties and threat, they lacked any further concern for their good objects of the inner and the outer world. Even the destructiveness and aggression often typical for the psychotic state finds an expression in Prince Prospero’s attempt to overwhelm and to kill the uninvited intruder who, as the prince falls into his own dagger, finally ends in self-destruction. As they all had escaped

those whom they loved and used to care for, the desire to mourn their deaths had become unnecessary, as had the grief for their companions’ death because of the sudden deadly climax which effected all of them.

In concluding my thoughts on psychotic organization with Poe’s tale, I run the risk of being misunderstood, as if I intended to introduce a mood of black despair. Poe’s “Masque of the Red Death” represents for me in the present context a challenge. Only when guided by the conviction that we are individually and collectively able to escape and to survive the threats which are devastating the country do we run the risk of being overtaken by inadequate solutions. The attempt to expatriate the apparent irrationality and psychotic dynamics from our business and economic world would then eventually hold dominion over us all. Prince Prospero and his thousand guests may above all be a lesson for us that an extreme loss of reality, the hatred for thinking and grieving and a neglect for the external environment will not serve to master adequately mortal threat and anxieties.

Although I do feel an enormous despair when it comes to the question of how the predominant psychotic dynamics in many of our contemporary organizations and enterprises will be overcome, I nevertheless hope that the other metaphoric frame, the depressive position, represents a way out of the contemporary devastation, and is not just an academic’s delusion of solace.

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REGIONAL DEVELOPMENT AND *MAQUILADORA* PRODUCTION: THE RAPID RISE AND DEMISE OF THE EOI STRATEGY IN YUCATÁN, MEXICO

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RESUMO

Este artigo oferece uma avaliação crítica da industrialização orientada-para-exportação (IOE) como uma estratégia de desenvolvimento regional, no caso da indústria *maquiladora** de Yucatán, México, durante a década passada. A indústria *maquiladora* de Yucatán passou por crescimento dramático e uma repentina redução, devido a um conjunto de fatores em nível local, nacional e internacional combinados, que reduziram o número de empresas orientadas para exportação. A pesquisa apresenta uma análise da distribuição geográfica dos impactos econômicos que são relevantes não apenas para Yucatán, mas também para outras regiões periféricas que adotam a estratégia IOE como meio para promoção de desenvolvimento econômico. Além disso, este estudo identifica as forças locais, nacionais e internacionais que atuaram na recente redução da produção das *maquiladoras* de Yucatán.

Palavras-chave: Desenvolvimento Local, Indústria *maquiladora*, industrialização orientada-para-exportação.

ABSTRACT

This paper offers a critical appraisal of export-oriented industrialization (EOI) as a regional development strategy in the case of Yucatán's *maquiladora* industry, in Mexico, during the past decade. Yucatán's *maquiladora* industry had a dramatic rise and sudden demise, as a variety of factors at local, national and international scales combined to reduce the number of export-oriented firms. The research provides an assessment of the geographic distribution of economic impacts that is relevant not only for Yucatán, but also for other peripheral regions that adopt the EOI strategy as a means of promoting economic development. Furthermore, this study identifies the local, national and international forces that have brought about the recent demise of *maquiladora* production in Yucatán.

Keywords: Local Development, *maquiladora* industry, export-oriented industrialization.

* as indústrias maquiladoras do México montam produtos de diversos ramos, e se baseiam em portarias governamentais que permitem importar e exportar componentes livres de impostos.

INTRODUCTION

Maquiladora production, a form of export-oriented industrialization (EOI) based on the labor-intensive assembly of imported components, has been Mexico's *de facto* economic development strategy during the past two decades. Until the 1990s, *maquiladoras* had traditionally located along the U.S.-Mexico border. However, during the past decade, export-oriented production has spread throughout other regions of the country. Among non-border regions, perhaps the most dramatic shift in *maquiladora* location was experienced by the state of Yucatán. In 1990, only 13 *maquiladoras* were operating in this peripheral state in southeastern Mexico (INEGI, 2004). By 2001, more than 140 export-oriented firms employed more than 37,300 persons in urban and rural areas of the state (*Secretaría de Desarrollo Industrial*, 2001). The rapid rise of *maquiladoras* in Yucatán was short-lived, however, as a variety of factors at local, national and international scales combined to reduce the number of export-oriented firms by approximately 40 percent as of August 2004 (INEGI, 2004).

Given the dramatic rise and sudden demise of Yucatán's *maquiladora* industry during the past decade, this paper offers a critical appraisal of EOI as a regional development strategy in the case of Yucatán, Mexico. More specifically, in light of the uneven economic relations that prevail between rural and urban areas of the state, my research provides an assessment of the geographic distribution of economic impacts that is relevant not only for Yucatán, but also for other peripheral regions that adopt the EOI strategy as a means of promoting economic development. Furthermore, this study identifies the local, national and international forces that have brought about the recent demise of *maquiladora* production in Yucatán.

MEXICO'S MAQUILADORA INDUSTRY

A *maquiladora* is an export-oriented assembly plant characterized by the labor-intensive manufacture of imported components (MacLachlan and Aguilar, 1999; Sagawe, 1996). The *maquiladora* program was conceived as an imitation of the export-oriented growth strategy of the newly industrializing economies of East Asia (Cravey, 1998). However, from the Mexican perspective, the impetus for the EOI strategy was the

implementation of the Border Industrialization Program (BIP) in 1965. During World War II, labor shortages in the United States led to the implementation of the *Bracero* Program, allowing millions of Mexican laborers to enter the U.S. as seasonal workers (South, 1990). The program attracted large numbers of migrants to the border region and resulted in rapid urban growth on both sides of the border.

The Border Industrialization Program was Mexico's response to U.S. elimination of the *Bracero* Program in 1964. The primary objective of the BIP was to provide employment to hundreds of thousands of seasonal workers who had migrated to the border region. Attracting labor-intensive manufacturers to the border region was envisioned as the means of generating jobs (South, 1990). The BIP subsidized construction of industrial parks and allowed foreign companies to own and operate factories in Mexico and import equipment and inputs duty-free if final products were exported (Cravey, 1998). Although the BIP initially restricted *maquila* activity to the border region, most geographic restrictions were eliminated by 1973 (Skclair, 1993; South, 1990).

The growth of Mexico's *maquiladora* program accelerated rapidly with the country's economic crisis of the early 1980s. Neo-liberal economic reforms adopted by the Mexican government at this time included reduction of trade barriers, privatization of state-owned enterprises, and drastic currency devaluations. These reforms also resulted in lower real wages, a particularly important factor for the promotion of export-oriented development. By mid-2001, the number of *maquiladoras* in Mexico had peaked at more than 3700 export-oriented firms, employing more than 1.3 million Mexicans. These firms accounted for more about \$75 billion (US) in output and almost \$7 billion (US) in salaries in 2002. In addition, *maquiladoras* employed about 30 percent of all industrial workers in Mexico and accounted for two-thirds of gross industrial product and one-half of total exports (Banamex, 2004b; INEGI, 2004).

In recent years, a number of researchers have attempted to identify the impacts of *maquiladora* production on regional economic development in Mexico. Important contributions to the literature include Skclair's (1993) treatise on the developmental implications of the EOI strategy along the Mexican side of the border; Cravey's (1998)

analysis of the shift from import substitution industrialization (ISI) to export-oriented production and its impacts on class and gender in two border locations (Ciudad Madero and Nogales); and the work of Gereffi (2000) and colleagues (Bair and Gereffi, 2001) on the role of clothing and apparel *maquiladoras* in global commodity chains and implications for economic development. Most of this research is descriptive in nature, focusing on border locations. Only two largely descriptive studies have been carried out in Yucatán (Wilson and Kayne, 2000; García and Pérez, 1996).

To date, however, only one scholar has quantified the indirect impacts of export-oriented production on Mexico's national economy. Guajardo (1998) estimates that the economic effects of *maquiladoras* are more than 50 percent less than those of domestic firms. On average, every dollar of *maquiladora* production generates about 34 cents of additional output and every dollar of income produces another 15 cents in salaries and benefits. Based on Guajardo's estimated weighted output multiplier of 1.34, export-oriented firms accounted for almost three percent of Mexico's gross national product in 1999.

Until the 1990s, *maquiladoras* had been concentrated in the U.S.-Mexico border region. The Border Industrialization Program provided the initial stimulus for concentration of export-oriented firms in this region. The proximity to headquarters, "twin plants," and markets in the United States explains, to some degree, the continued clustering of *maquiladora* plants. During the past decade, however, a fairly dramatic change has occurred in the location of these export-oriented production facilities. In 1990, more than 90 percent of all *maquiladoras* were located in Mexican border states. Although 75 percent of *maquiladoras* remain in this region, about 40 percent of plants established since 1990 are located in Mexico's interior. The state of Yucatán represents perhaps the most dramatic example of this abrupt locational shift, displaying an average annual growth rate of 29 percent in *maquila* employment between 1991 and 2000.

STUDY AREA

The state of Yucatán, Mexico is located at the crown of the peninsula that bears its name (Figure 1). At present, the state's population is more than

1.7 million; about 40 percent of all inhabitants and almost one-half of total employment are concentrated in the capital city and *municipio* of Mérida (INEGI, 2000). In 2002, Yucatán's gross state product per capita was approximately \$4500 (US), about 80 percent of the national average (Banamex, 2004a; INEGI, 2004). Additional evidence of the state's marginality may be found in its relatively high illiteracy rates and poor average levels of educational attainment.

FIGURE 1. LOCATION OF STUDY AREA



Source: Instituto Nacional de Estadística, Geografía e Informática (INEGI)

As shown in Figure 1, the state of Yucatán is comprised of 106 *municipios*, roughly equivalent to U.S. counties. Large disparities in basic socio-economic measures may also be found at the local scale in Yucatán. For example, average literacy levels in rural areas (79 percent) lag far behind those in the state capital (95 percent). In addition, almost 50 percent of total employment and more than two-thirds of value-added in the state's economy is concentrated in the *municipio* of Mérida. As a consequence, 2002 per capita income averaged more than \$6300 (US) in the state capital and about \$3500 (US) in the rest of the state (Banamex, 2004a).

The disparities that prevail within Yucatán are further exemplified by differences in economic structure between urban and rural areas of the state. As shown in Table 1 below, employment in Mérida is dominated by service industries and wholesale and retail trade, which account for more than two-thirds of all jobs. In rural areas, the

primary sector remains far and away the most prominent source of employment. However, some structural change occurred during the 1990s, as employment in agriculture and mining decreased by more than 50 percent. In addition, service sector employment more than doubled in rural communities between 1988 and 1998. Also of note is the substantial increase in the importance of *maquiladora* employment in a single decade. In 1988, export-oriented firms represented less than one percent of all jobs. By 1998, these firms accounted for almost seven percent of employment in Mérida and nine percent in rural locations.

for adoption of the EOI strategy. A recent policy, the **1995-2001 State Development Plan**, played an even more important role in promoting the proliferation of export-oriented firms in Yucatán. This initiative identified the excessive concentration of economic activity in Mérida as the primary cause of disparities in income, employment and economic opportunity in Yucatán (*Estado de Yucatán*, 1996). In response, policymakers proposed channeling *maquiladora* production to rural areas of the state in order to promote a more equitable spatial distribution of employment, redress disparities, and achieve “balanced sustainable regional development.”

TABLE 1. STRUCTURE OF EMPLOYMENT IN YUCATÁN, 1988, 1993 AND 1998

Sector	1988		1993		1998	
	Mérida	Rural	Mérida	Rural	Mérida	Rural
Agriculture and mining	6.0%	73.5%	3.7%	64.6%	2.4%	45.2%
Food and textile products	13.0%	4.8%	17.4%	8.5%	10.7%	11.9%
Other manufacturing	8.9%	2.3%	8.2%	2.9%	6.2%	1.7%
Construction	8.5%	2.5%	3.2%	0.8%	6.7%	1.9%
Commerce, hotels and restaurants	31.9%	9.1%	38.1%	16.1%	24.2%	13.3%
Other services	30.6%	7.8%	26.6%	6.3%	43%	17.4%
<i>Maquiladora</i> industries	1.0%	0.0%	2.7%	0.9%	6.8%	8.6%

Source: INEGI (*Censos Económicos* 1989, 1994, 1999)

Until the 1980s, Yucatán’s economy was dominated by the production of henequen, a natural fiber, indigenous to the region, used primarily to make rope and twine. The crop remained the region’s primary economic activity until the 1970s. However, the introduction of synthetic fibers and emergence of new competitors in South America, Africa and Asia brought about a dramatic decline in the region’s henequen industry. By 1990, only one-quarter of the population was employed in agriculture and henequen accounted for less than 10 percent of total production (Baños, 1996; Castilla, 1991).

In the 1980s, state and federal governments began to come to terms with the inevitable demise of the henequen industry. As a consequence, the **Henequen Zone Restructuring Program** was implemented in 1984, providing the initial impetus

FIGURE 2. MAQUILADORAS AND MAQUILADORA EMPLOYMENT IN YUCATÁN



Source: INEGI (*Banco de Información Económica*)

CHARACTERISTICS OF MAQUILADORAS IN YUCATÁN

As displayed in Figure 2 above, 13 *maquiladoras*, employing about 2500 people had been established in Yucatán by 1990. By early 2001, though, almost 140 *maquiladoras* were in operation, employing more than 35,000 persons throughout the state. The vast majority of export-oriented plants produce clothing for markets in the United States and Yucatán accounted for almost ten percent of total national employment in clothing and apparel *maquiladoras* by 2001. In 1990, export-oriented firms played an insignificant role in the regional economy; by 2001, however, these firms accounted for more than one-third of total manufacturing employment and more than two-thirds of total exports (*Secretaría de Desarrollo Industrial*, 2000).

The number of *maquiladoras* in Yucatán and employment in export-oriented firms peaked in mid-2001. During the past three years, the state has lost about 40 percent of these assembly plants and more than 20 percent of its *maquiladora* employment. Currently, 87 *maquiladoras* employ about 30,000 people throughout the state. According to information provided by the *Secretaría de Desarrollo Industrial y Comercial* (2004), between 2001 and 2004 *maquiladora* employment in Mérida fell from 15,261 to 10,724; in rural areas more than 3000 jobs were lost (from 22,066 to 18,877 jobs).

Although the majority of export-oriented firms in Yucatán are located in Mérida, more than 60 percent of total *maquiladora* employment is found in rural areas of the state. Export-oriented firms in rural areas are strongly clustered in Yucatán's traditional "henequen zone," the most heavily populated area of the state within a radius of 80 kilometers around Mérida. In general, rural *maquilas* are newer and larger than those in Mérida. *Maquiladoras* are concentrated in relatively few locations. In 2001, export-oriented firms operated in 30 of Yucatán's 106 *municipios*; by 2004, *maquiladoras* were found in only 20 *municipios*. Although many rural locations have only one *maquiladora*, export-oriented firms account for substantial employment in these communities due to their size.

DEFINING REGIONAL DEVELOPMENT

As discussed above, policymakers in Yucatán adopted EOI, in the guise of *maquiladora* production, as a regional economic development strategy during the 1990s. Any number of criteria may be employed to define economic development. To

paraphrase Malecki (1991), the definition of economic growth is unambiguous, whereas development has meant almost all things to all people. For the purposes of this study, development may be defined as a social and economic process consisting of three interrelated components: growth in regional income (a necessary condition); increasing equity in the distribution of regional income; and change in the structure of the regional economy.

Economic growth refers to the expansion of income at greater rate than population growth (Malecki, 1991). Typically, national accounts or other aggregate data are used to measure economic growth. Growth, however, does not necessarily lead to a qualitative improvement in welfare. According to Chisholm (1990) and Peet and Hartwick (1999), growth consists solely of replicating existing economic structure and does not presuppose structural transformation of the regional economy or a more equitable distribution of income. Consequently, development must incorporate far more than mere economic growth. As Mabougunje (1981) affirms, economic growth is certainly a necessary, though not sufficient, condition for development.

The distribution of benefits constitutes another important distinction between simple economic growth and economic development. Although inequality in Latin America tends to be driven by initial endowments of natural resources and human capital, policymaking during the past two centuries has brought about even greater levels of disparity (Franko, 1999). This uneven development has been justified on the grounds of economic rationality. Although some scholars (Kuznets, 1955; Myrdal, 1957; Hirschman, 1958; and Alonso, 1980) have identified increasing inequality as a likely, and perhaps necessary, consequence during the early stages of development, Peet and Hartwick (1999) contend that economic development differs from growth in that it pays attention to conditions of production and social consequences, including distribution of incomes and human welfare. Consequently, reduction of regional income differences, as well as integration of regions with the national economy, must be major goals of economic development policies (Gilbert and Goodman, 1976).

According to Franko (1999), the primary distinction between development and economic growth is the notion of structural change – the impact of technology on economic structure. Structural change is associated with increasing specialization and greater interdependency among different

sectors, as well as regions, of the economy (Friedmann and Weaver, 1979). This technical change is characterized by shifts in the mix of products, industries, firms and jobs that make up an economy, as well as development of skilled labor, changes in the technological capabilities of firms and institutions, and increasing diversity and specialization of regional economies (Malecki, 1991).

METHODS

In light of the definition of economic development chosen above, two primary concerns must be addressed in order to evaluate the viability of the EOI strategy in the case of Yucatán. On the one hand, some degree of geographic and sectoral detail must be included in the assessment of economic impacts. In addition, analysis must account not only for the direct impacts of *maquiladora* production on Yucatán's economy, but also the indirect effects of secondary purchases of goods and services by firms and households. Given these issues, the input-output model offers an appropriate framework for such an assessment.

Input-output (IO) analysis is a modeling technique that divides an economy into two components – consumption and production – and accounts for the direct and indirect interdependencies or linkages among the different sectors of the economy. Traditionally, the IO model has been employed to assess the implications of changes in “exogenous” factors such as household demand, government spending or international trade (Sadoulet and de Janvry, 1995). Since changes in export-oriented production, by their very nature, respond to forces external to Yucatán's economy, the technique is well-suited for policy analysis in this proposed application. For the purposes of this study, 18-sector inter-regional input-output

(IRIO) models have been developed in order to assess the impact of the EOI strategy in Mérida and rural areas of Yucatán (defined as the rest of the state) between 1990 and 2003.

The primary objective of the inter-regional input-output model is holistic accuracy, as defined by Jensen (1980). Rather than pursuing the impossible accuracy of each cell of the IO table (partitive accuracy), holistic accuracy emphasizes representation of the main features of the regional economy in a descriptive sense while preserving the importance of these features in an analytical sense. In other words, the goal of the IRIO table is to accurately reflect the relative size and overall structure of Yucatán's urban and rural economies.

DATA ACQUISITION

A combination of primary and secondary data has been employed in order to develop inter-regional input-output models of Yucatán's economy. Available secondary data include information at the *municipio*-level on employment, wages and benefits, total output and inputs, value added and employment from the 1989, 1994 and 1999 Economic Censuses and the 1990 and 2000 Censuses of Population and Housing. The *Banco de Información Económica* (BIE) also provides annual information on number of establishments, total employment, wages, profits, intermediate consumption, value of production, and overall value added for the *maquiladora* industry at the state level. These data serve as the primary resource for calibration of inter-regional input-output models.

Additional secondary data resources include the regional input-output table for the state of Yucatán and social accounts data for two rural *municipios*. The regional input-output table was developed by researchers at the *Centro de Investigaciones y Estudios Avanzados* at the *Instituto Politécnico Nacional* in Mérida (CINVESTAV, 2000). The table consists of 72 sectors and was compiled from a variety of primary and secondary sources. The regional table provides many of the baseline technical coefficients and other needed components of the inter-regional model. Social accounts data for two rural *municipios* (Hocabá and Chabihau) were combined with primary data to estimate the sectoral and regional distribution of income and expenditures of rural households (Ortiz, 1999; SEDESOL, 2000).

Information from secondary sources has been supplemented with survey data collected during fieldwork in Yucatán. Data were collected from four sources – *maquiladoras*, domestic firms, officials of trade organizations that represent firms in different sectors of Yucatán's economy, and urban and rural households. Based on information provided by the *Secretaría de Desarrollo Industrial*, 60 *maquiladoras* were randomly selected to participate in a survey of export-oriented firms; representatives of 45 plants agreed to take part. Participants, usually plant managers or other administrators, were asked to provide basic information on total value of production, total employment, salaries and benefits, cost and origin of raw materials, intermediate inputs and producer services, and final destination of production. In addition, a similar sample of 44 domestic firms was surveyed to identify the origin of their intermediate inputs and raw materials and the final destination of their finished products.

The survey of domestic firms was supplemented with expert opinion from representatives of the Chambers of the Clothing and Apparel, Manufacturing, Retail Trade, and Baking industries. In general, experts were asked to respond hypothetically to the survey of domestic industries as if they operated a typical firm in urban or rural regions of Yucatán. Finally, a small sample of private households in Mérida and rural areas was interviewed to determine what kinds of goods and services they consume and the percentage of household income spent in different sectors of Yucatán's economy (housing, food, clothing, entertainment, etc.). The information obtained from this survey was integrated with data from the regional input-output table and rural social accounts to calculate the sectoral and regional distribution of household expenditures in rural and urban areas of Yucatán.

Based on a combination of these primary and secondary data, a variety of well-documented techniques have been used to calibrate IRIO models for 1988, 1993 and 1998.¹ Technical details can be found in Hewings (1985), Isard et al. (1998), and especially Biles (2004). Each IO model decomposes economic activity for 18 sectors and two regions (Mérida and rural areas) of Yucatán's economy.

Table 2 below, aggregated to six sectors for sake of parsimony and ease of interpretation, displays IRIO technical coefficients for 1993. Of note in the context of this study are the direct purchases of *maquiladora* industries. Not surprisingly, labor comprises the single most important expense among export-oriented firms. However, *maquiladoras* also display reasonably strong linkages with the tertiary sector in Mérida, purchasing about 8.3 cents of inputs for every dollar of output.

TABLE 2. INTER-REGIONAL INPUT-OUTPUT TABLE FOR YUCATÁN, 1993

SECTOR		MÉRIDA						RURAL					
		Agriculture and mining	Food and textile products	Other manufacturing	Commerce, hotels and restaurants	Other services	Maquiladoras	Agriculture and mining	Food and textile products	Other manufacturing	Commerce, hotels and restaurants	Other services	Maquiladoras
MÉRIDA	Agriculture and mining	0.006	0.012	0.006	0.000	0.000	0.000	0.007	0.011	0.007	0.000	0.000	0.000
	Food and textile products	0.028	0.022	0.000	0.000	0.000	0.000	0.031	0.024	0.000	0.000	0.001	0.000
	Other manufacturing	0.005	0.005	0.110	0.001	0.001	0.000	0.005	0.005	0.114	0.001	0.001	0.000
	Commerce, hotels and restaurants	0.049	0.094	0.234	0.015	0.011	0.012	0.047	0.087	0.232	0.016	0.014	0.012
	Other services	0.058	0.020	0.028	0.167	0.108	0.071	0.033	0.020	0.034	0.182	0.124	0.071
	Maquiladoras	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Labor	0.316	0.108	0.104	0.184	0.171	0.148	0.003	0.000	0.000	0.000	0.002	0.027
RURAL	Agriculture and mining	0.120	0.204	0.019	0.000	0.000	0.000	0.134	0.179	0.022	0.000	0.000	0.000
	Food and textile products	0.007	0.006	0.000	0.000	0.000	0.000	0.007	0.007	0.000	0.000	0.000	0.000
	Other manufacturing	0.001	0.001	0.019	0.000	0.000	0.000	0.001	0.001	0.020	0.000	0.000	0.000
	Commerce, hotels and restaurants	0.010	0.019	0.043	0.003	0.002	0.000	0.009	0.017	0.046	0.003	0.003	0.000
	Other services	0.005	0.003	0.003	0.014	0.014	0.000	0.004	0.003	0.004	0.015	0.015	0.000
	Maquiladoras	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Labor	0.000	0.020	0.060	0.012	0.030	0.020	0.381	0.064	0.127	0.147	0.223	0.141

Source: Author's calculations

¹ Because IO technical coefficients are relatively stable in the short-run, 1988 multipliers will be used for 1990; 1993 multipliers will be used for 1991-1995; and 1998 multipliers model will be used for 1996-present.

IRIO technical coefficients, such as those in Table 2, have been employed to calculate Type II output and employment multipliers. Following recent research by Oosterhaven and Stelder (2002), net multipliers have been estimated to avoid exaggerating overall (gross) economic impacts. Output multipliers, which reveal changes in the production of goods and services, serve to assess the impact of *maquiladoras* on economic growth and the distribution of gross regional product. Employment multipliers, which quantify job creation effects, are used to estimate the impact of export-oriented production on regional economic structure and structural change. In addition, a Miyazawa IO framework has been employed to calculate inter-relational income multipliers, which reveal the impact of changes in income in one region of Yucatán on income in the remaining region (Hewings, 1985; Rose and Beaumont, 1988).

MAQUILADORA PRODUCTION AND REGIONAL ECONOMIC GROWTH IN YUCATÁN

As stated above, economic growth is a necessary condition for regional economic development. Controlling for inflation, Yucatán's gross state product (GSP) increased by about 34 percent between 1993 and 2002 (about 3.3 percent annually). Between 1990 and 2000, the

state's population grew approximately 21.5 percent, or an average of almost two percent per year. In the case of Mérida, population increased about 2.4 percent annually between 1990 and 2000. Gross regional product, however, grew at a slightly faster annual rate (about 2.8 percent). In rural areas, population increased at about 1.7 percent annually during the past decade; gross regional product expanded by about five percent per year between 1993 and 2002 (INEGI, 2004). Consequently, even when population growth is taken into account, both urban and rural areas of Yucatán demonstrate a fair degree of economic growth since inception of the EOI strategy.

These results, however, do not reveal the impact of *maquiladora* production on regional economic growth. The first two columns of Table 3 below reveal gross state product for Yucatán (in thousands of pesos), as well as total value of gross state product corresponding to *maquiladora* industries in Yucatán between 1990 and 2003 (INEGI, 2004). These data have been termed GSP because they correspond only to the value added of export-oriented production that remains in Yucatán. Clearly, export-oriented firms became an increasingly important segment of Yucatán's economy between 1990 and 2000, accounting for almost four percent of total state income. However, the contribution of export-oriented industrialization to the state's economic growth has not increased since 2001.

TABLE 3. DIRECT AND TOTAL CONTRIBUTION OF MAQUILADORA PRODUCTION TO GSP, 1990 TO 2000

Year	GSP	Maquila	% GSP	Multiplier	Total	% Total	% Change
1990	7,186,421	41,093	0.6%	1.219	50,106	0.7%	
1991	9,040,251	61,454	0.7%	1.409	86,591	1.0%	2.0%
1992	11,372,301	87,227	0.8%	1.409	122,905	1.1%	1.6%
1993	15,029,646	90,008	0.6%	1.410	126,880	0.8%	0.1%
1994	17,218,056	110,944	0.6%	1.410	156,392	0.9%	1.4%
1995	20,898,510	194,520	0.9%	1.412	274,706	1.3%	3.2%
1996	29,029,150	339,150	1.2%	1.326	449,652	1.6%	2.2%
1997	36,895,171	558,220	1.5%	1.326	740,300	2.0%	3.7%
1998	45,777,958	1,025,168	2.2%	1.326	1,359,809	3.0%	7.0%
1999	56,711,465	1,866,024	3.3%	1.326	2,475,242	4.4%	10.2%
2000	69,076,325	2,492,667	3.6%	1.326	3,305,717	4.8%	6.7%
2001	74,026,178	2,719,998	3.7%	1.326	3,606,717	4.9%	6.1%
2002	81,859,090	2,667,032	3.3%	1.326	3,536,484	4.3%	-0.9%
2003	85,133,453	2,703,878	3.2%	1.326	3,585,342	4.2%	1.5%

Source: INEGI and author's calculations

This information represents only the direct impact of export-oriented production on the regional economy. If multiplier effects are taken into account (column five of Table 3), it is possible to estimate the overall (direct, indirect and induced) impacts of *maquiladora* production on Yucatán's economy.² When multiplier effects are considered, export-oriented production contributes more than four percent of Yucatán's gross state product. However, the final column of Table 3 provides perhaps the most telling insight into the relative importance of the EOI strategy. In general, between 1991 and 1999, *maquiladoras* accounted for a greater and greater share of the annual change in Yucatán's gross state product. In 1999, for example, these firms accounted for more than ten percent of the change in the total value of goods and services produced in the state's economy. Since 2000, however, *maquiladoras* have contributed a diminishing share to the region's economic growth. In 2002, export-oriented production declined for the first time; in 2003, *maquiladoras* generated a relatively small share of change in Yucatán's GSP.

Using the IRIO multipliers displayed in Table 4 and the inter-regional distribution of gross state product, it is also possible to determine the overall impact of *maquiladora* production on economic growth in both urban and rural areas of Yucatán. Not surprisingly, given their limited backward linkages, output multipliers for *maquiladora* industries are relatively small. Although aggregate multiplier effects are comparable for both regions of the state, the inter-regional distribution of impacts is considerably different. About 80 percent of multiplier effects in Mérida accrue within the region; only one-quarter of the impacts in rural areas of Yucatán remain in the countryside. Though not shown in Table 4, more than 75 percent of multiplier effects are the direct, indirect and induced result of household consumption. Tables 5 and 6 below reveal the direct, indirect and induced effects of export-oriented industrialization on the economies of Mérida and rural *municipios* for the period 1990-2000.³

TABLE 4. INTER-REGIONAL DISTRIBUTION OF MAQUILADORA IMPACTS ON OUTPUT

SECTOR		MÉRIDA			RURAL		
		1988	1993	1998	1988	1993	1998
MÉRIDA	Agriculture and mining	0.000	0.001	0.001	0.000	0.002	0.001
	Food and textile products	0.018	0.013	0.010	0.012	0.025	0.015
	Other manufacturing	0.006	0.006	0.004	0.003	0.005	0.003
	Commerce, hotels and restaurants	0.048	0.053	0.038	0.021	0.052	0.037
	Other services	0.130	0.280	0.238	0.057	0.262	0.227
RURAL	Agriculture and mining	0.013	0.016	0.011	0.013	0.036	0.020
	Food and textile products	0.003	0.003	0.003	0.002	0.006	0.005
	Other manufacturing	0.003	0.001	0.001	0.001	0.001	0.001
	Commerce, hotels and restaurants	0.007	0.008	0.006	0.003	0.008	0.005
	Other services	0.017	0.025	0.013	0.007	0.023	0.012
	TOTAL MULTIPLIER	1.247	1.406	1.324	1.119	1.420	1.328

Source: Author's calculations

² Output multipliers in Table 3 represent the weighted average of inter-regional IO multipliers for Mérida and rural areas. Weighted multipliers may be calculated by multiplying inter-regional IO multipliers (Table 4) by the corresponding percentage of gross state product (Table 7) and summing for both regions. For example, the weighted output multiplier for 1990 (1.219) is equal to $(1.247 \times 0.775) + (1.119 \times 0.225)$.

³ Unfortunately, data that permit estimation of the inter-regional distribution of gross state product (post-2000) will not be available until publication of the results of the 2004 Economic Census.

In the case of Mérida, *maquiladoras* comprised a relatively small, but increasingly important, segment of the local economy between 1990 and 2000. However, the EOI strategy had fairly prominent effects on annual changes in gross regional product, especially between 1995 and 2000. Leakage (inter-regional) effects, representing direct and indirect purchases of export-oriented firms and employees in rural areas of the state, account for about 25 percent of multiplier effects and substantially increase the impacts of *maquiladora* production on the city's economy. However, since Mérida's economy is about three times larger than the rural economy, relative impacts are considerably smaller.

As displayed in Table 6 below, the relative impacts of export-oriented industrialization are much greater in the case of rural *municipios*. By 2000, these firms accounted for about ten percent of all goods and services produced in rural areas.

In addition, about 15 percent of the change in gross regional product between 1998 and 2000 was attributable to the growth of *maquiladora* industries in the countryside. Table 6 also indicates that virtually all multiplier effects are intra-regional – the impact of export-oriented firms in Mérida on rural areas of Yucatán is minimal.

Maquiladora production and inter-regional income distribution

As discussed above, the impact of the EOI strategy on the inter-regional distribution of income is another important criterion for economic development. In the context of this study, distributional effects may be assessed in two ways – analysis of changes in the distribution of gross regional product and estimation of inter-relational income multipliers for urban and rural regions of Yucatán.

TABLE 5. TOTAL CONTRIBUTION OF MAQUILADORA PRODUCTION TO GROSS REGIONAL PRODUCT IN MÉRIDA

Year	GRP Mérida	Intra-regional	Inter-regional	Total Maquila	% GRP	% Change
1990	5,569,476	38,750	826	39,576	0.7%	
1991	7,087,557	65,164	4,609	69,773	1.0%	2.0%
1992	9,029,607	92,492	6,542	99,034	1.1%	1.5%
1993	12,083,835	90,026	8,139	98,165	0.8%	0.0%
1994	13,688,355	110,966	10,032	120,998	0.9%	1.4%
1995	16,426,229	146,101	30,016	176,117	1.1%	2.0%
1996	22,555,650	238,310	43,847	282,157	1.3%	1.7%
1997	28,372,386	327,626	86,401	414,027	1.5%	2.3%
1998	34,791,248	520,264	176,608	696,872	2.0%	4.4%
1999	42,760,445	914,928	328,527	1,243,455	2.9%	6.9%
2000	53,344,859	1,401,996	476,884	1,878,880	3.5%	6.0%

Source: INEGI, Banamex and author's calculations

TABLE 6. TOTAL CONTRIBUTION OF MAQUILADORA PRODUCTION TO GROSS REGIONAL PRODUCT IN RURAL AREAS

Year	GRP rural	Intra-regional	Inter-regional	Total Maquila	% GRP	% Change
1990	1,616,945	9,114	1,416	10,530	0.7%	
1991	1,952,694	14,256	2,562	16,818	0.9%	1.9%
1992	2,342,694	20,235	3,636	23,871	1.0%	1.8%
1993	2,945,811	25,176	3,539	28,715	1.0%	0.8%
1994	3,529,701	31,031	4,363	35,394	1.0%	1.1%
1995	4,472,281	92,845	5,744	98,589	2.2%	6.7%
1996	6,473,500	161,149	6,346	167,495	2.6%	3.4%
1997	8,522,785	317,549	8,724	326,273	3.8%	7.7%
1998	10,986,710	649,082	13,855	662,937	6.0%	13.7%
1999	13,951,020	1,207,422	24,365	1,231,787	8.8%	19.2%
2000	17,971,797	1,752,673	37,336	1,790,009	10.0%	13.9%

Source: INEGI, Banamex and author's calculations

Gross regional product (GRP), representing the total value of goods and services produced in an area during a given year, may be used as a measure of regional income. If GRP generated by *maquiladora* production is subtracted from actual GRP for urban and rural areas, it is possible to estimate the impact of the EOI strategy on the inter-regional distribution of income in Yucatán. These data, which were derived from the previous two tables, are displayed below (Table 7).

Inter-relational income multipliers incorporate consumption effects into the standard IO model; in an inter-regional context, they facilitate assessment of linkages and interdependencies between locations of production and consumption (Hewings et al., 2001). Based on the information displayed in Table 8, several clear patterns may be identified in the distribution of income. Although overall income multipliers for each region (column sums) are comparable, income

TABLE 7. IMPACT OF MAQUILADORA PRODUCTION ON REGIONAL DISTRIBUTION OF INCOME

Year	ACTUAL (w/ EOI)				PREDICTED (w/o EOI)			
	GRP	%	GRP Rural	%	GRP	%	GRP Rural	%
1990	5,569,476	77.5%	1,616,945	22.5%	5,529,900	77.5%	1,606,415	22.5%
1991	7,087,557	78.4%	1,952,694	21.6%	7,017,784	78.4%	1,935,876	21.6%
1992	9,029,607	79.4%	2,342,694	20.6%	8,930,573	79.4%	2,318,823	20.6%
1993	12,083,835	80.4%	2,945,811	19.6%	11,985,670	80.4%	2,917,096	19.6%
1994	13,688,355	79.5%	3,529,701	20.5%	13,567,357	79.5%	3,494,307	20.5%
1995	16,426,229	78.6%	4,472,281	21.4%	16,250,111	78.8%	4,373,692	21.2%
1996	22,555,650	77.7%	6,473,500	22.3%	22,273,493	77.9%	6,306,005	22.1%
1997	28,372,386	76.9%	8,522,785	23.1%	27,958,359	77.3%	8,196,512	22.7%
1998	34,791,248	76.0%	10,986,710	24.0%	34,094,376	76.8%	10,323,773	23.2%
1999	42,760,445	75.4%	13,951,020	24.6%	41,516,990	76.5%	12,719,233	23.5%
2000	53,344,859	74.8%	17,971,797	25.2%	51,465,979	76.1%	16,181,788	23.9%

Source: INEGI and author's calculations

The data in Table 7 indicate that the export-oriented industrialization strategy had a moderately positive impact on the inter-regional distribution of income between 1990 and 2000. By 1995, noticeable differences in income distribution begin to appear - prior to this time the *maquiladora* industry was too small to affect aggregate income distribution. If Yucatán had not adopted the EOI strategy, only 23.9 percent of economic activity would have been found in rural areas of the state by 2000. Since 25.2 percent of gross state product accrued to rural *municipios* in 2000, the *maquiladora* strategy was responsible for a net shift of approximately 5.2 percent in the inter-regional distribution of income between 1990 and 2000.

in rural areas of Yucatán consistently produces greater spillover effects. For example, in 1998 every dollar of income in rural Yucatán generated more than 29 cents of income in Mérida. One dollar of income earned in Mérida, however, produced about 26 cents of income in rural areas of the state. Inter-relational income multipliers also confirm the unequal economic relations that prevail between Mérida and rural areas of Yucatán: inter-regional income effects in rural areas of the state are greater than intra-regional impacts and, consequently, the overall income effects that accrue to Mérida (row sums) are somewhat larger than those outside the state capital.

TABLE 8. INTER-RELATIONAL INCOME MULTIPLIERS FOR MÉRIDA AND RURAL AREAS

REGION	1988			1993			1998		
	Mérida	Rural	Total	Mérida	Rural	Total	Mérida	Rural	Total
Mérida	1.265	0.247	1.512	1.414	0.374	1.788	1.332	0.293	1.625
Rural	0.209	1.243	1.452	0.285	1.302	1.587	0.261	1.275	1.536
Total	1.474	1.49		1.699	1.676		1.593	1.568	

Source: Author's calculations

MAQUILADORA PRODUCTION AND REGIONAL ECONOMIC STRUCTURE

A final criterion proposed above to assess the developmental implications of the EOI strategy is impact on regional economic structure. Several variables could be utilized to assess structural change – total output, productivity or value added, for example. Employment by sector, however, will be employed in combination with inter-regional employment multipliers to estimate the impacts of *maquiladora* production on economic structure at the regional level.

Table 1 above displays the sectoral distribution of employment by region for 1988, 1993 and 1998. As mentioned above, a substantial degree of structural change appears to have taken place in rural economies since 1988. Although agriculture still employs almost 50 percent of rural workers, this sector now represents a significantly smaller share of total employment. By 1998, food and textile products, commerce, hotels and restaurants, and other services comprised more than 40 percent employment among rural economies.

Some structural change is also apparent in Mérida, though it is much less pronounced than in rural areas. Although commerce, hotels and restaurants and other services remain the two most important sectors in the state capital, the later industry comprised 43 percent of total employment in 1998. Food and textile products

continued to generate the most employment among manufacturing sectors, though employment in this industry did not display much change between 1988 and 1998. As in rural areas, relative employment in agriculture declined sharply during the ten-year period.

In general, then, some degree of structural change took place in both regions between 1988 and 1998. The objective of this section is to identify the portion of structural change that may be attributed to implementation of the EOI strategy in urban and rural regions of Yucatán. Inter-regional employment multipliers, which disaggregate job creation effects by sector and region, may be used to estimate the impact of *maquiladora* production on regional economic activity and employment between 1990 and 2004.

As indicated by Table 9 below, the employment creation effects of *maquiladora* production are very limited. Based on the most recent (1998) multipliers, every 1000 export-oriented jobs in Mérida generate only 111 additional employment opportunities. More than 50 percent of these jobs are concentrated in service industries in the state capital; about one-quarter of all jobs spill over into agriculture in rural areas of the state. In the case of rural *municipios*, aggregate multiplier impacts are similar. Every 1000 *maquila* jobs in rural areas result in 134 new jobs. About 40 percent of employment opportunities are generated in service industries in Mérida; a comparable number of jobs are created intra-regionally in agriculture.

TABLE 9. INTER-REGIONAL DISTRIBUTION OF EMPLOYMENT GENERATION

SECTOR		MÉRIDA			RURAL		
		1988	1993	1998	1988	1993	1998
MÉRIDA	Agriculture and mining	0.002	0.001	0.001	0.007	0.003	0.002
	Food and textile products	0.006	0.006	0.004	0.012	0.010	0.006
	Other manufacturing	0.004	0.002	0.003	0.005	0.002	0.003
	Commerce, hotels and restaurants	0.016	0.017	0.019	0.021	0.017	0.018
	Other services	0.041	0.028	0.039	0.054	0.027	0.037
RURAL	Agriculture and mining	0.050	0.025	0.028	0.143	0.056	0.051
	Food and textile products	0.003	0.004	0.005	0.006	0.005	0.006
	Other manufacturing	0.002	0.001	0.001	0.002	0.001	0.001
	Commerce, hotels and restaurants	0.006	0.006	0.006	0.008	0.006	0.006
	Other services	0.010	0.005	0.006	0.012	0.005	0.006
	TOTAL JOB CREATION EFFECTS	1.139	1.096	1.111	1.27	1.131	1.134

Source: Author's calculations

According to the *Secretaría de Desarrollo Industrial* (2001), *maquiladoras* employed 37,321 persons in 2001. Approximately 60 percent of employment (22,066) was found in rural areas; the remainder (15,261) was concentrated in Mérida. Based on employment multipliers, export-oriented firms in Mérida generated almost 1700 additional positions, including about 700 jobs in rural *municipios*. Export-oriented firms in rural areas created about 3000 new employment opportunities in 2001. Almost half of the job creation effects of rural *maquiladoras* spilled over into the state capital. Overall, then, the EOI strategy generated almost 4700 employment opportunities in Yucatán in 2001. About 2500 of these jobs were concentrated in Mérida; the remainder (almost 2200 positions) was distributed among rural *municipios*.

As mentioned above, Yucatán has lost more than 7000 export-oriented jobs since 2001. As of August 2004, *maquiladoras* employed 10,724

workers in Mérida and 18,877 persons in rural areas of the state. Based on the employment multipliers in Table 9, the recent decline in export-oriented production in Yucatán has resulted in the loss of 7726 direct and 942 indirect jobs. Due to a 30 percent decline in export-oriented employment between 2001 and 2004, a disproportionate share of total job losses (more than 58 percent) are sustained in Mérida.

With respect to economic structure, the impact of the EOI strategy is minimal. According to INEGI (2000), the total economically active population of Yucatán was 618,448 in 2000. The *municipio* of Mérida alone accounted for almost one-half of all employment (286,134 persons). Based on the employment multipliers in Table 9 above, the impact of export-oriented production was very limited in both urban and rural areas of the state. In each case, the jobs created by *maquiladoras* represent less than one percent of total employment.

TABLE 10. IMPACT OF MAQUILADORA PRODUCTION ON CHANGES IN EMPLOYMENT STRUCTURE, 1988 – 1998

SECTOR	RURAL			MÉRIDA		
	Change	EOI	%EOI	Change	EOI	%EOI
Agriculture and mining	-3878	1544	—	-38	67	-175.9%
Food and textiles products	19684	196	1.0%	11307	194	1.7%
Other manufacturing	354	22	6.3%	5751	109	1.9%
Commerce, hotels and restaurants	16922	208	1.2%	25549	680	2.7%
Other services	27705	226	0.8%	69380	1417	2.0%

Source: INEGI and author's calculations

It is also possible to assess the impact of *maquiladora* production on structural change between 1988 and 1998. Table 10 above displays total employment change by region and sector between 1988 and 1998, as well as job creation effects of export-oriented industries during this same time period. The contribution of *maquiladora* industries to employment change by sector is also quantified for each region.

Although the jobs generated by export-oriented firms during this period did not represent a significant portion of Yucatán's total employment, in some instances *maquiladoras* did account for an important share of employment change between 1988 and 1998. For example, in rural *municipios*, significant gains were found in other manufacturing and commerce, hotels and restaurants. The greatest impact in rural areas of the state, however, was found in agriculture – between 1988 and 1998 *maquiladoras* created more than 1500 employment opportunities for farmers in rural *municipios*. This outcome may be interpreted from two opposing perspectives. On the one hand, the EOI strategy may have had beneficial results in reducing rural-to-urban migration during the 1990s and allowing farmers and their families (and other rural residents, as well) to remain in their local communities. On the other hand, by creating employment opportunities in agriculture (as opposed to manufacturing or services), *maquiladora* production may actually have delayed structural change in rural areas of Yucatán.

With respect to Mérida, export-oriented production also had some impact on changes in employment structure. In general, more than 80 percent of all impacts were concentrated among tertiary industries such as other services and

commerce, hotels and restaurants. The EOI strategy also had a relatively important impact on employment change in food and textile products.

Overall, the employment generated by *maquiladora* production does not have a significant impact on the structure of employment in urban and rural regions of Yucatán's economy. In general, the number of jobs created by such firms is too small to affect the sectoral distribution of employment at the regional level. However, substantial structural change has taken place in Mérida and rural *municipios* since 1988. When employment generated by *maquiladoras* between 1988 and 1998 is evaluated as a share of total employment change by sector and region during the ten-year period, the EOI strategy does exert a slightly more profound impact on economic structure in both urban and rural areas. Nonetheless, it must be concluded that the overall impact of export-oriented production on regional economic structure is limited.

EXPLAINING THE DEMISE OF MAQUILADORA PRODUCTION IN YUCATÁN

As the preceding analysis indicates, export-oriented production in Yucatán has declined sharply since 2001. In part, the sudden demise of the EOI strategy in Yucatán may be attributed to the severe economic downturn in the United States starting in early 2001. The vast majority of export-oriented assembly plants in Mexico are either controlled by U.S. interests or export to U.S. markets. As a consequence, at the national level, *maquiladora* employment has declined almost

20 percent and the number of export-oriented firms has dropped from more than 3700 to about 2800 in the past three years (INEGI, 2004). However, in the case of Yucatán, two additional factors have played critical roles in bringing about the rapid decline in export-oriented production – local political change and the accession of China to the World Trade Organization (WTO).

As mentioned above, the **1995-2001 State Development Plan** provided significant incentives for the proliferation of *maquiladoras* in Yucatán. State government, controlled by the ruling *Partido Revolucionario Institucional* (PRI), invested heavily in infrastructure needed to promote export-oriented industrialization, including construction of industrial parks, expansion of port facilities, and improvement of highways, particularly in rural areas. In addition, government officials provided training programs for *maquiladora* employees and actively sought out potential export-oriented firms abroad. As a result, more than 100 *maquiladoras* established facilities in Yucatán during this time.

however, offers a likely explanation for the locational decisions of these export-oriented firms. The vast majority of *maquiladoras* in Yucatán (85 percent) produce clothing and apparel. However, according to one international consulting firm, clothing production costs in China are about 15 percent lower than in Mexico (Rolland Berger Strategy Consultants, 2001).

China’s increasing dominance of the clothing and apparel industry is confirmed by a preliminary analysis of WTO trade data. As Table 11 clearly indicates, clothing and apparel exports from Mexico to the United States declined by more than 10 percent between 2000 and 2002. In fact, Mexican exports to Europe and Asia also declined during this period. China, on the other hand, experienced very limited trade losses in the United States after 2000. Furthermore, in contrast to Mexico, China has managed to expand its clothing and apparel exports to Europe and the rest of Asia following its entry into the WTO.

TABLE 11. CLOTHING AND APPAREL EXPORTS, MEXICO AND CHINA (BILLIONS OF U.S. DOLLARS)

YEAR	MEXICO			CHINA		
	North America	Western Europe	Asia	North America	Western Europe	Asia
2000	8.2	0.0	8.6	11.5	3.6	36.1
2001	7.6	0.0	8.0	11.9	3.7	36.6
2002	7.3	0.0	7.8	11.2	4.7	41.3

Source: World Trade Organization

However, the PRI lost control of state government to the opposition *Partido de Acción Nacional* (PAN) in 2001. Although the opposition party also supported the EOI strategy, it lacked the social and political capital of the former governor, who had attracted the initial *maquiladoras* to Yucatán in the 1980s. Some export-oriented firms, particularly smaller sub-contractors who relied on close personal relationships with state government officials, ceased production by the end of 2001.

Although local political change explains the decline in sub-contractors and smaller *maquiladoras*, it does not account for plant closings among larger, independent firms and the subsidiaries of multinational corporations. The accession of China to the World Trade Organization in December 2001,

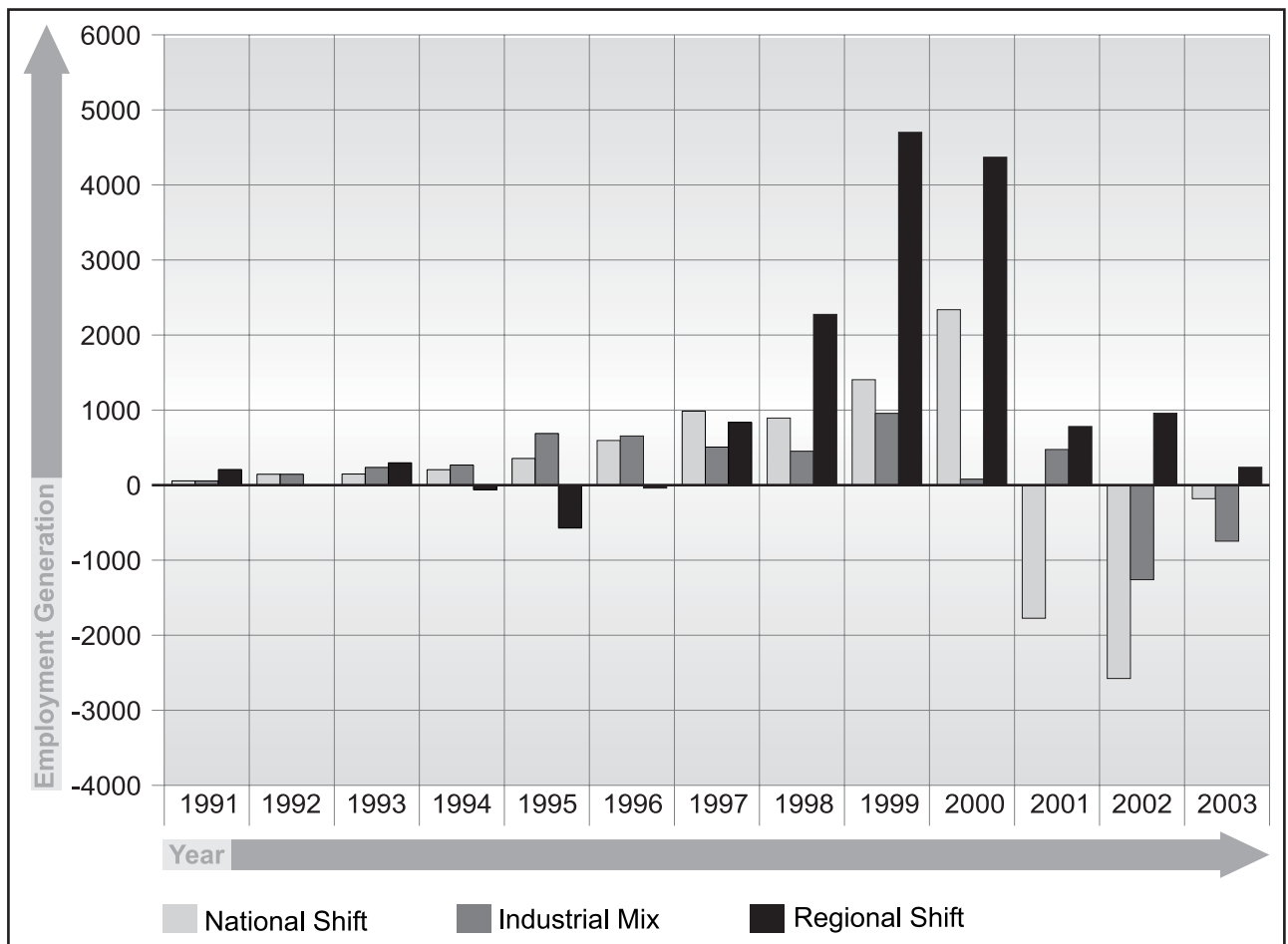
The relative importance of the diverse factors that have prompted the sudden demise of export-oriented production in Yucatán may be better understood by applying dynamic shift-and-share analysis, a simple analytical technique that decomposes annual change in economic structure into three components: national shift; industry mix; and regional competitiveness. The national shift component corresponds to the change in regional employment that may be attributed to macro-level forces beyond the borders of the study area. The industry mix effect expresses the expected change in employment had each sector of the regional economy followed its corresponding national growth rate; it represents a “proportional shift” due to differences between national and

regional economic structures. The regional competitiveness component comprises a “differential shift” between sectoral growth rates at the regional and national levels that are the result of natural resource endowments, comparative advantage, entrepreneurial ability, and the effects of regional policy. The sum of national, industry mix and regional competitiveness components equals overall change in employment between two time periods (Munroe and Biles, 2004).

Figure 3 below displays the three components of dynamic shift-and-share analysis for Yucatán’s *maquiladora* industry. In general, results reveal three periods of change in export-oriented production between 1991 and 2003. The first period, from 1991 to 1996, is marked by slow but steady growth of *maquiladora* production due

primarily to national shift and industry mix factors. Between 1997 and 2000, however, the regional competitiveness component accounts for the majority of export-oriented job creation. This period roughly coincides with the efforts of the previous state government to promote the EOI development strategy. The final period of change in *maquiladora* growth begins in 2001. National shift and industry mix components turn sharply negative, reflecting the impact of recession in the United States on Mexico’s export-oriented firms (national shift) and China’s growing comparative advantage in clothing and apparel production (industry mix). The regional competitiveness component remains positive, indicating that Yucatán retains a comparative advantage in clothing production relative to the rest of Mexico.

FIGURE 3. SHIFT-AND-SHARE ANALYSIS OF MAQUILADORA PRODUCTION IN YUCATÁN



Source: Author’s calculations

CONCLUSIONS

Policymakers in Yucatán adopted the EOI strategy during the 1990s with the express purpose of promoting greater levels of economic development, particularly in rural areas of the state. As this study attests, *maquiladora* production as regional economic development strategy in Yucatán has produced mixed results. On the one hand, export-oriented production clearly had a positive impact on economic growth and inter-regional income distribution between 1990 and 2000. Since 2001, however, *maquiladora* production has contributed relatively little to the region's economic growth. In addition, output and inter-relational income multipliers reveal that the asymmetric functional economic relationship between Mérida and rural areas persists. Furthermore, employment multipliers indicate that the EOI strategy has not promoted any significant structural change in either Mérida or the rest of Yucatán.

The ultimate objective of Yucatán's EOI strategy – balanced sustainable regional development – is highly unlikely in the absence of structural change. In research conducted in the mid-1990s, Gereffi (2000) concluded that Yucatán lacked the competitive advantages to compete with the border region and central Mexico in the emerging trans-national clothing and apparel chain between the southern United States and Mexico. Consequently, Yucatán became little more than a supplier of cheap labor in the 1990s. China's recent emergence as a producer of clothing and apparel on a global scale now threatens Yucatán's limited comparative advantage.

As the analysis above indicates, the EOI strategy may have significant positive impacts on output, income and employment in peripheral regions of developing countries. However, local policymakers must look beyond direct economic benefits (employment creation, for example) in order to assess the viability of such a strategy. The case of Yucatán is illustrative. During the 1990s, government officials addressed the "necessary conditions" for export-oriented production – improving infrastructure and providing training programs for *maquiladora* employees. However, this strategy failed to provide resources for local firms looking to supply goods and services to *maquiladoras*. Furthermore, government officials also failed to take advantage of the presence of export-oriented industries to expand linkages with domestic firms and develop more skilled labor, particularly in rural areas.

In conclusion, the EOI strategy provided policymakers in Yucatán a short-term opportunity to effect a fundamental structural transformation of the state's economy. Although regional policy plays a critical role in converting economic growth into economic development, recent policy initiatives did not specifically contemplate the role of export-oriented industrialization in bringing about structural change in the regional economy. As a consequence, Yucatán's EOI strategy, like the henequen boom of the past century, has failed due to its reliance on a single product, lone market and the whims of foreign capital.

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